

FIG 1 (a)

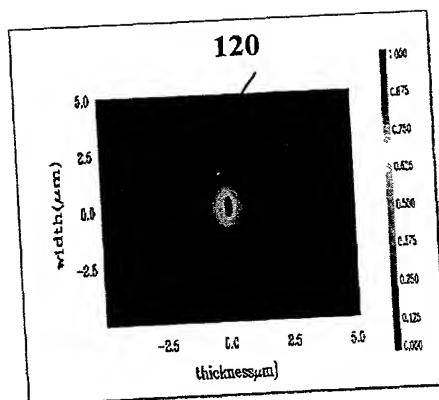
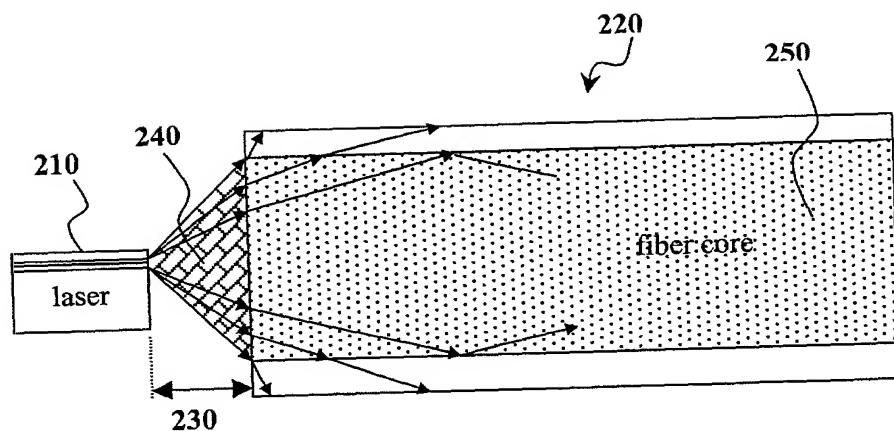
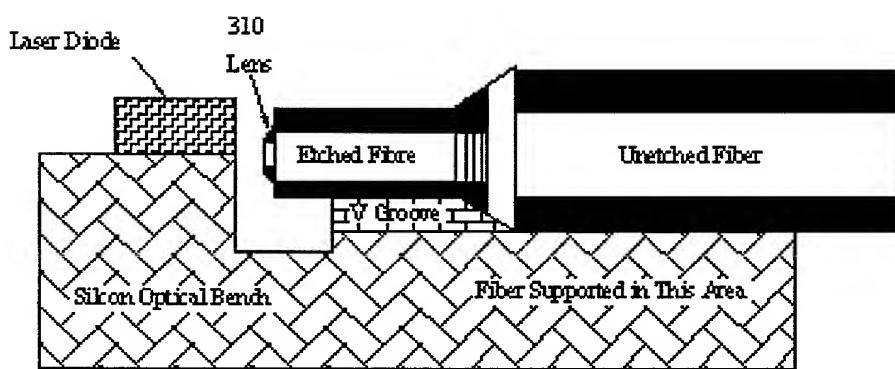


FIG 1 (b)



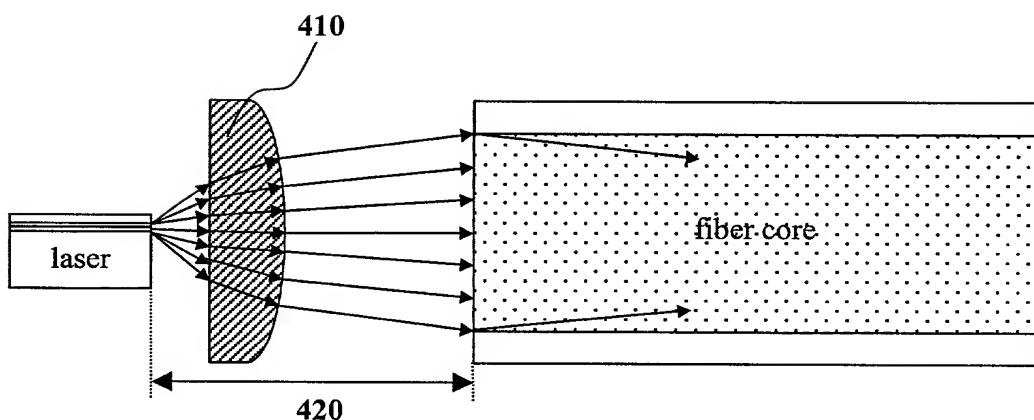
PRIOR ART

FIG 2



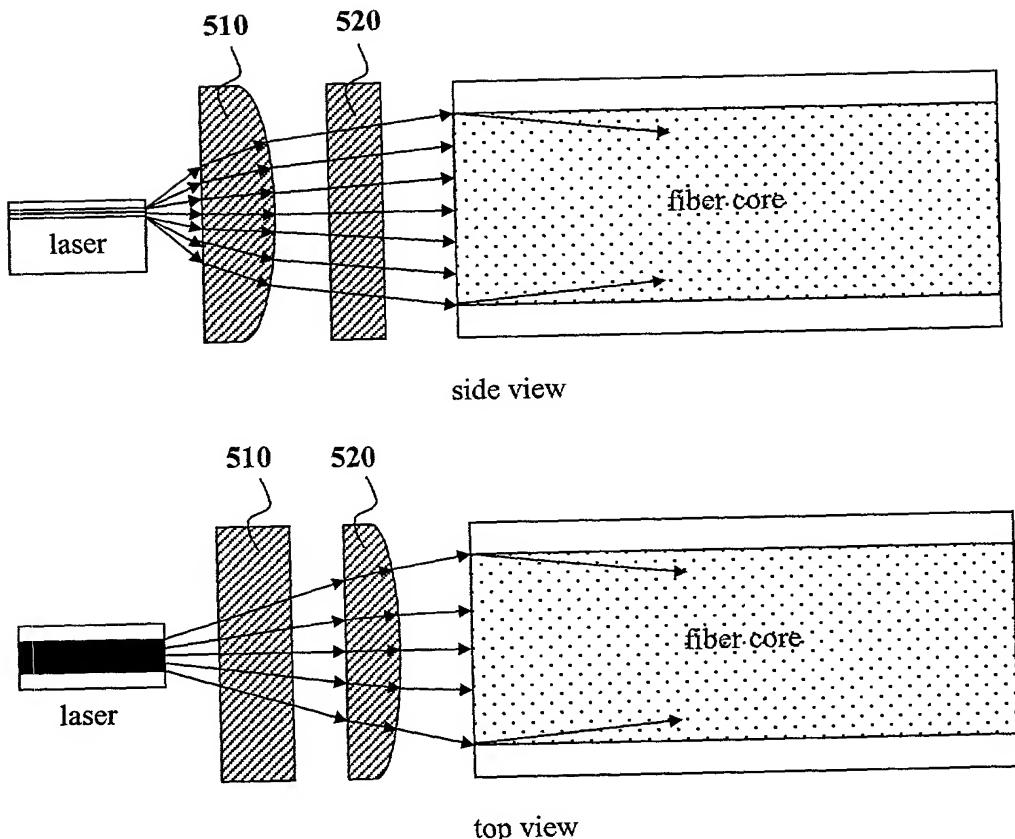
**PRIOR ART**

**FIG. 3**



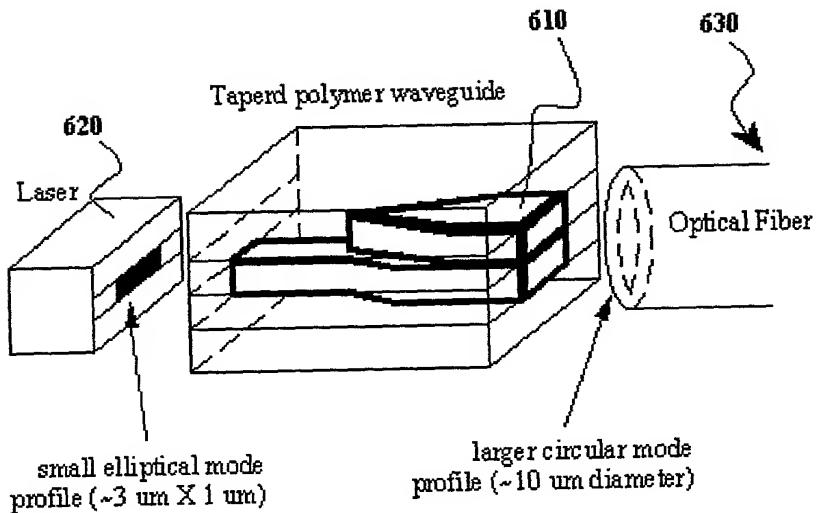
PRIOR ART

FIG. 4



**PRIOR ART**

**FIG. 5**



**PRIOR ART**

**FIG. 6**

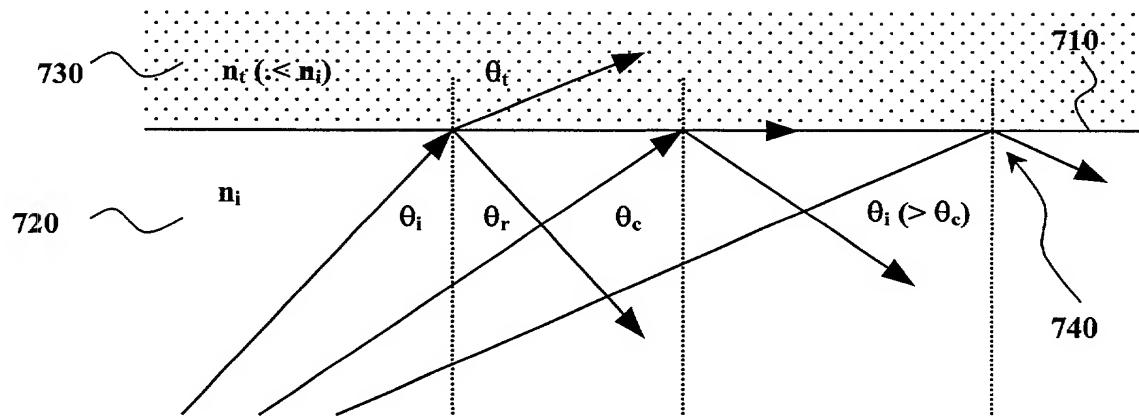


FIG 7

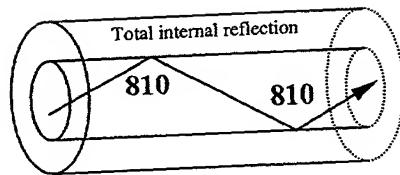


FIG. 8

10036347 10300

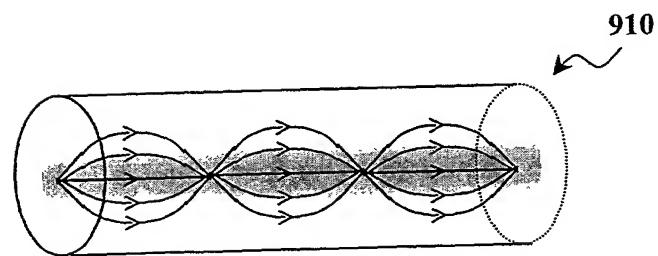


FIG 9

Atty. Docket No.: 021040-000300

Applicant: Yan Zhou and Seng-Tiong Ho

Title: INTEGRATED PLANAR COMPOSITE COUPLING STRUCTURES  
FOR BI-DIRECTIONAL LIGHT BEAM TRANSFORMATION...

Sheet 10 of 59

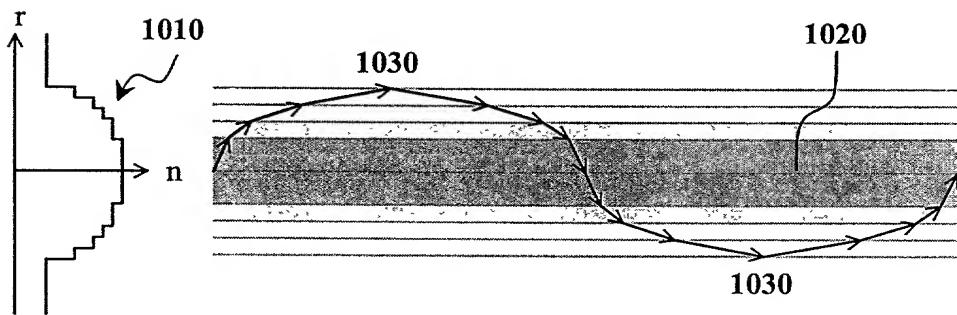


FIG 10

10036747.1 5900

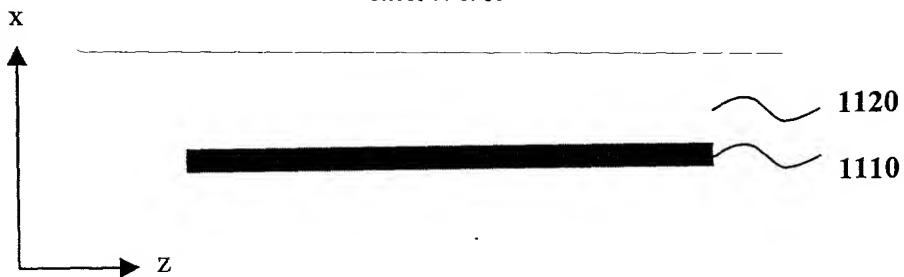


Fig 11A

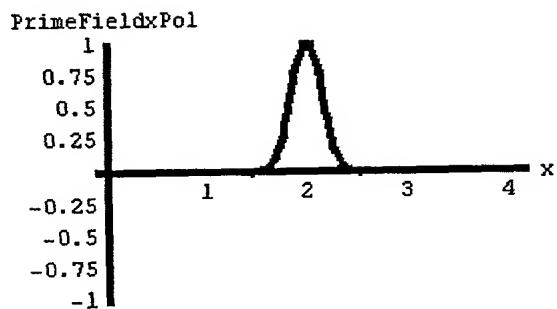


Fig 11B

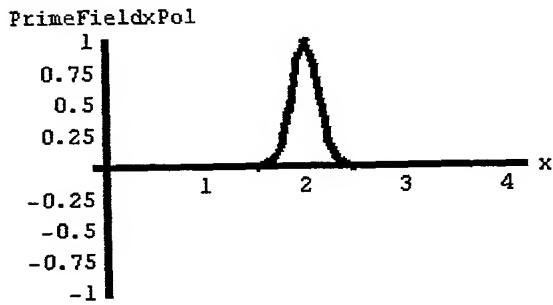


Fig 11C

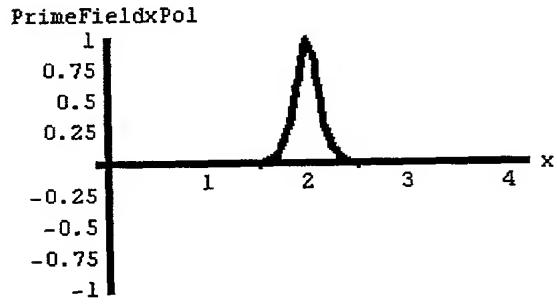


Fig 11D

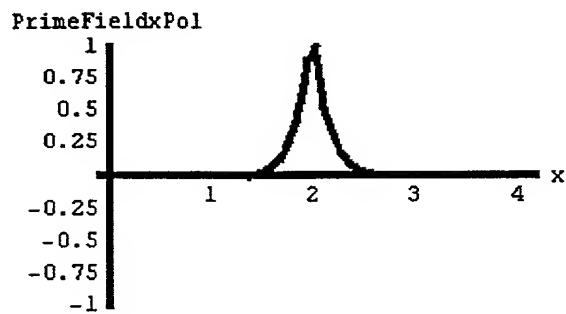


Fig 11E

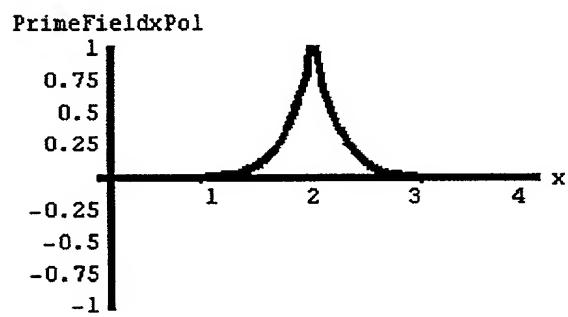


Fig 11F

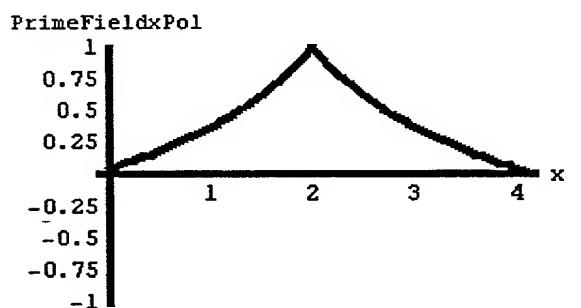


Fig 11G

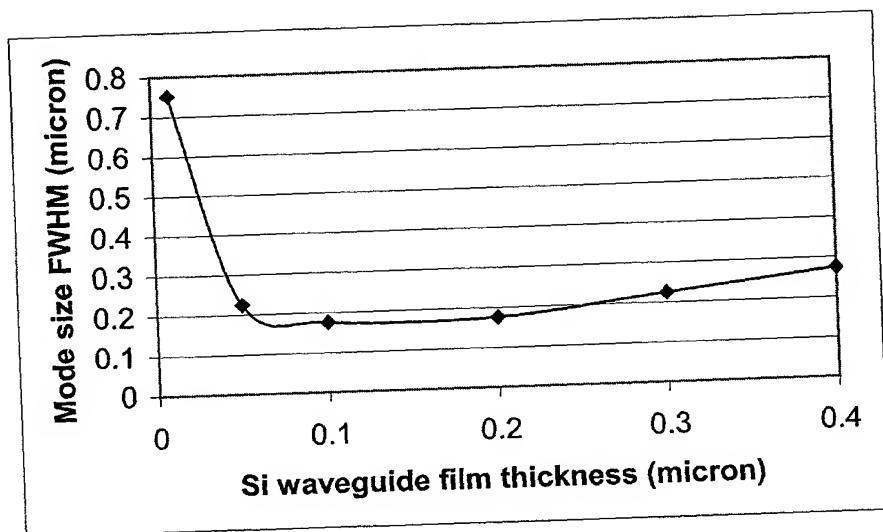


FIG. 12

1300

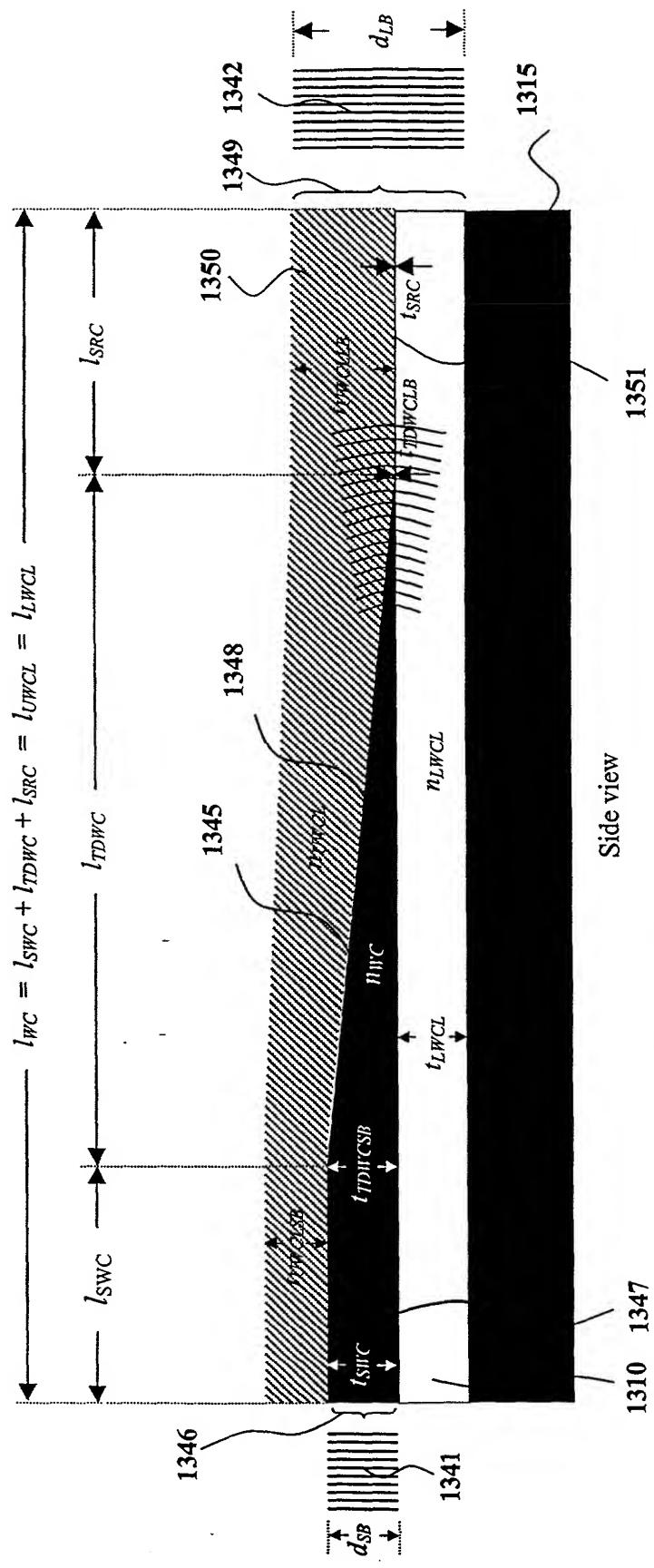


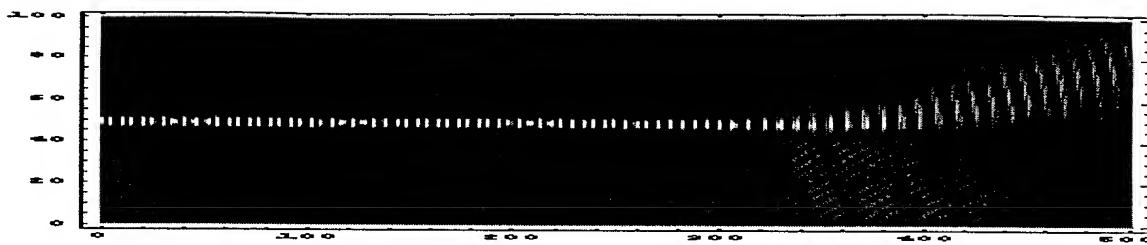
FIG 13

Atty. Docket No.: 021040-000300

Applicant: Yan Zhou and Seng-Tiong Ho

Title: INTEGRATED PLANAR COMPOSITE COUPLING STRUCTURES  
FOR BI-DIRECTIONAL LIGHT BEAM TRANSFORMATION...

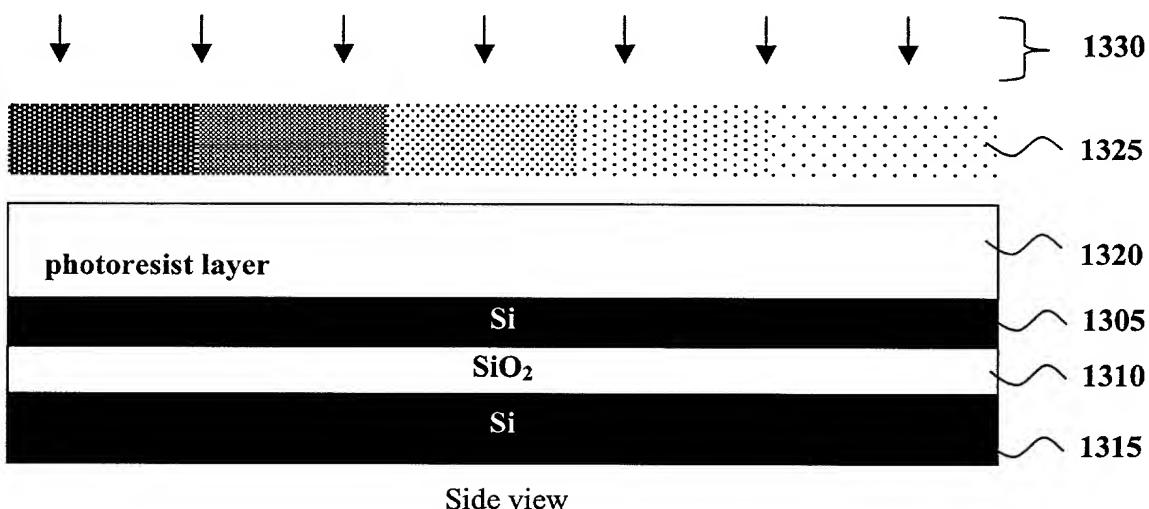
Sheet 15 of 59



**FIG 14**

403636.74 10/13/07

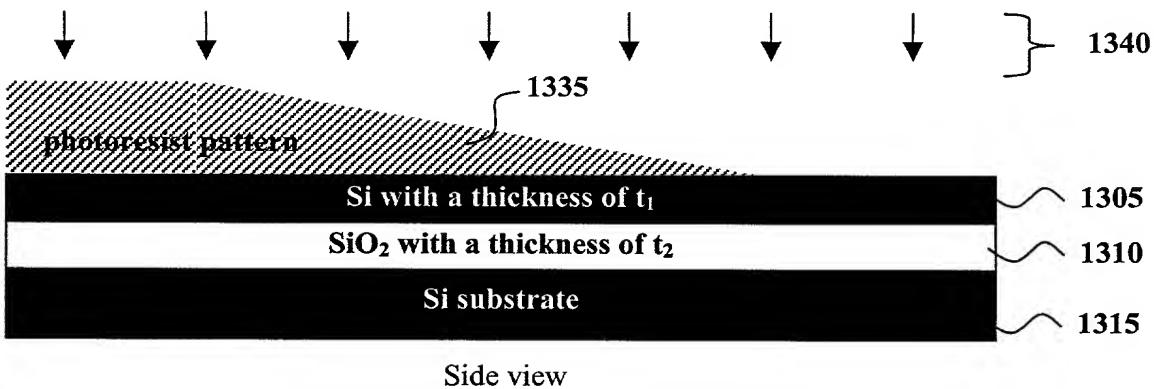
**UV exposure**



Side view

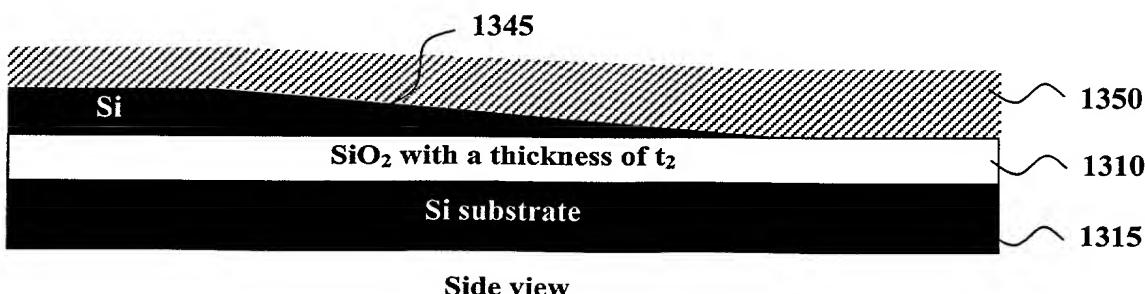
**Fig 15A**

**Dry etching**



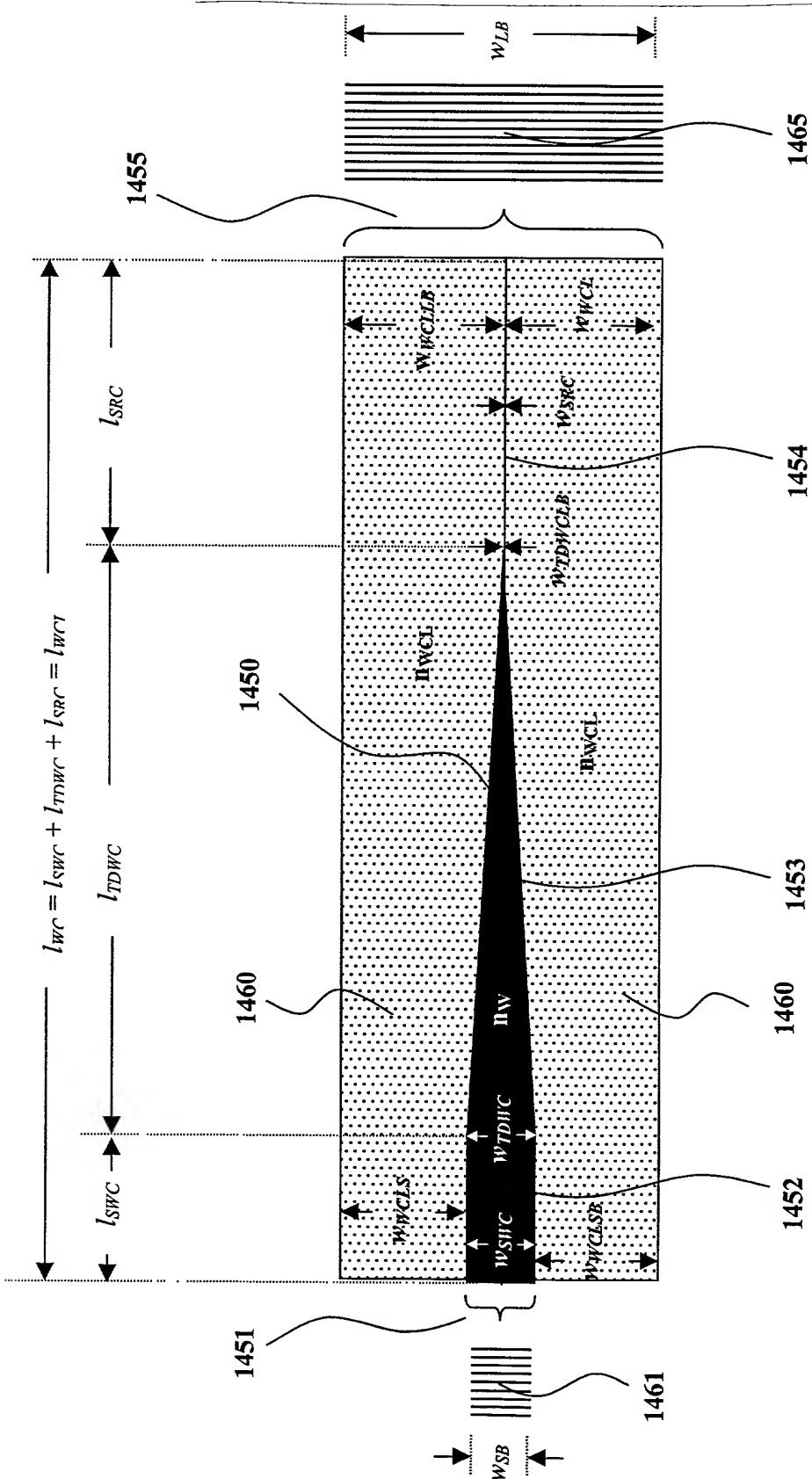
Side view

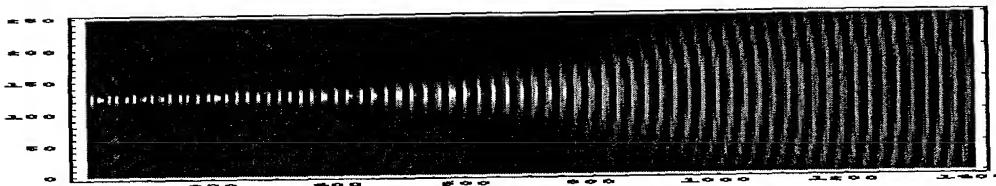
**Fig 15B**



Side view

**Fig 15C**





**FIG 17**

1500

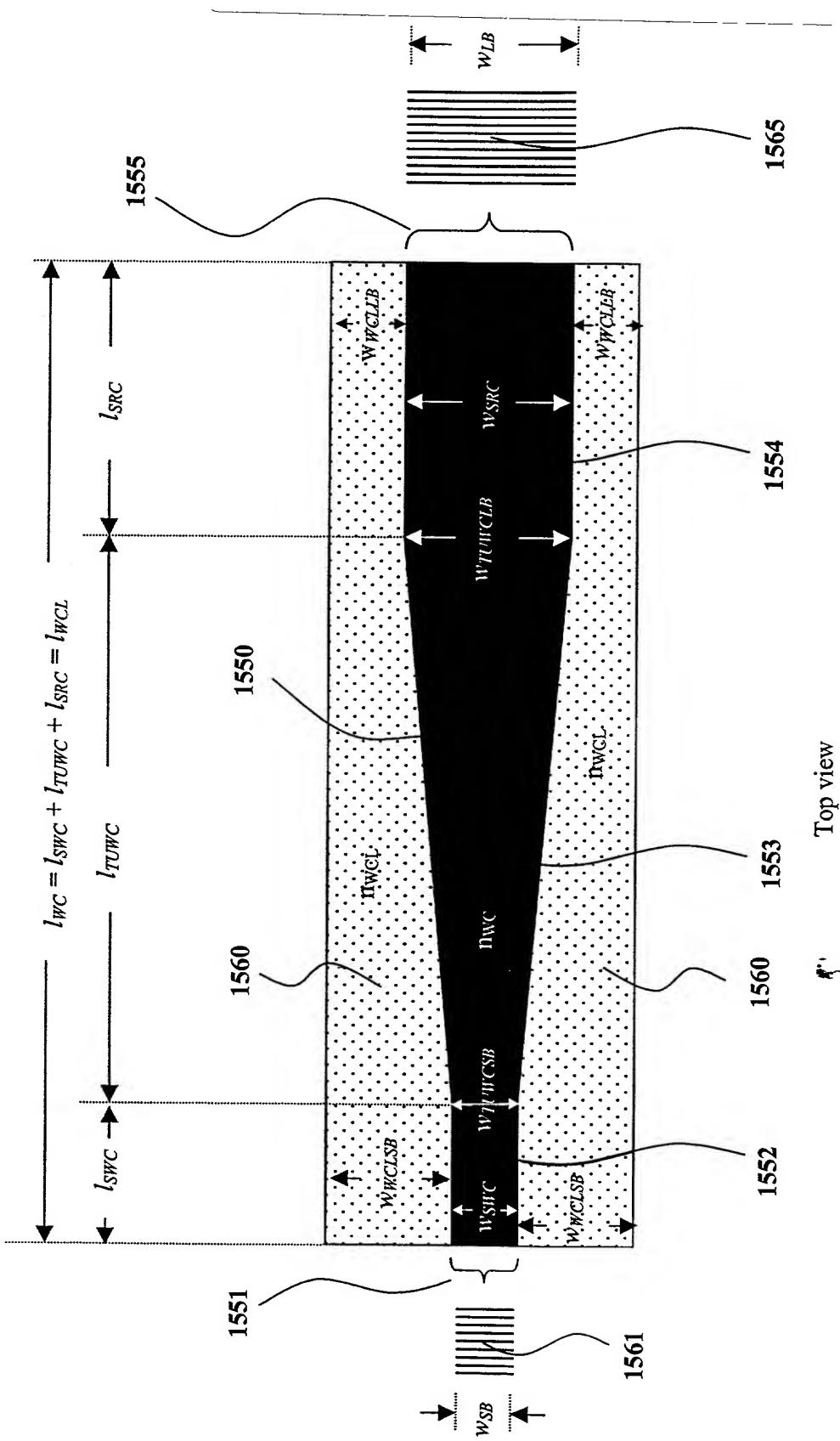
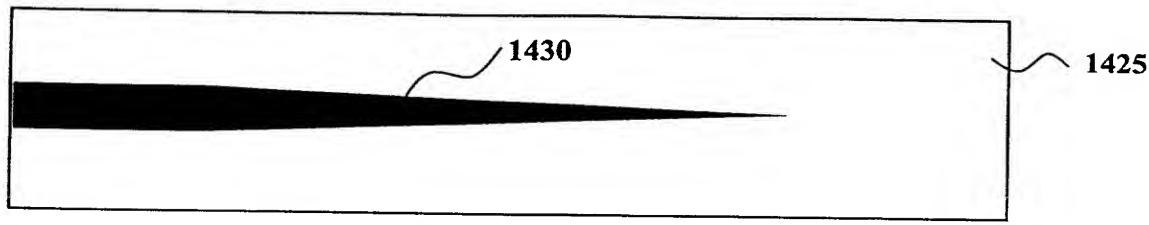
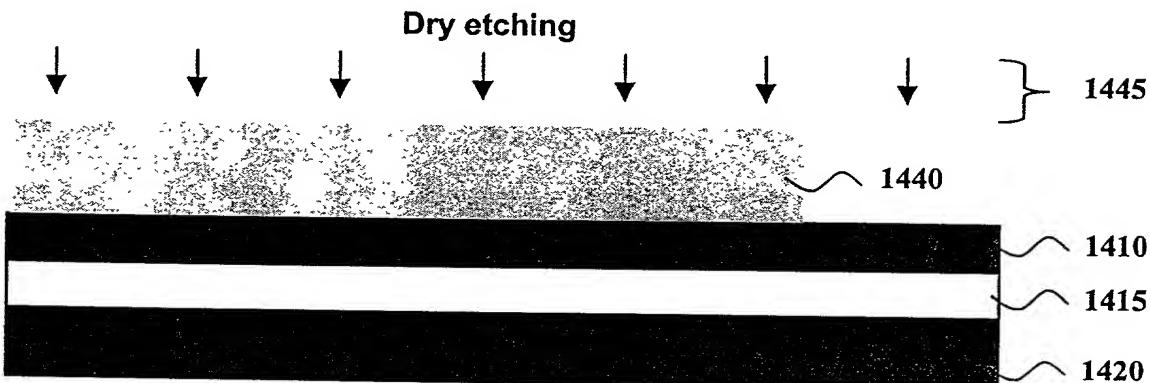


FIG. 19



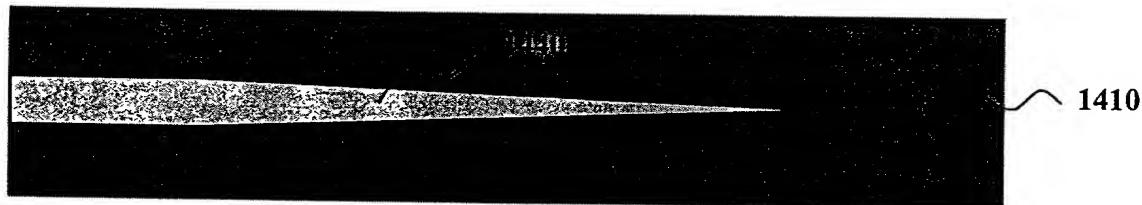
Mask top view

Fig 18A



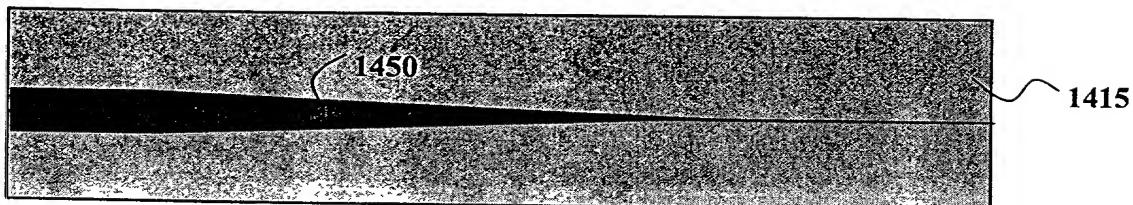
Side view

Fig 18B



Photoresist pattern top view

Fig 18C

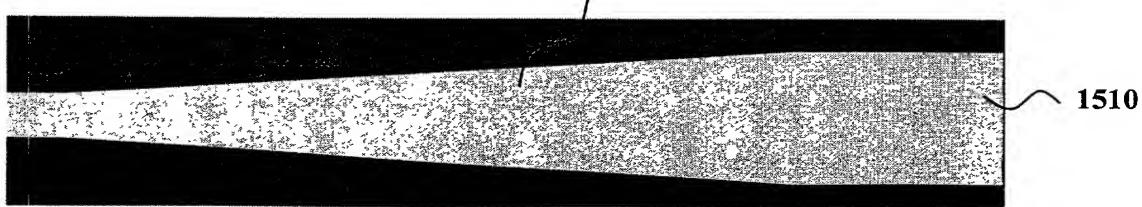
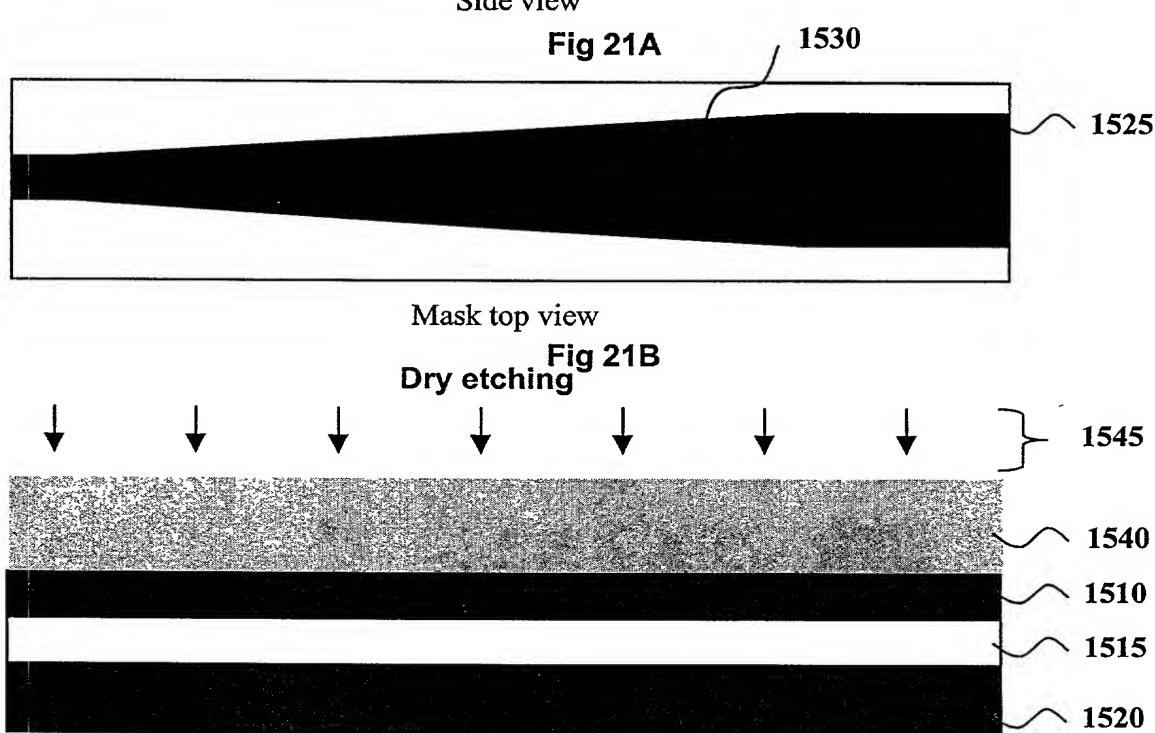
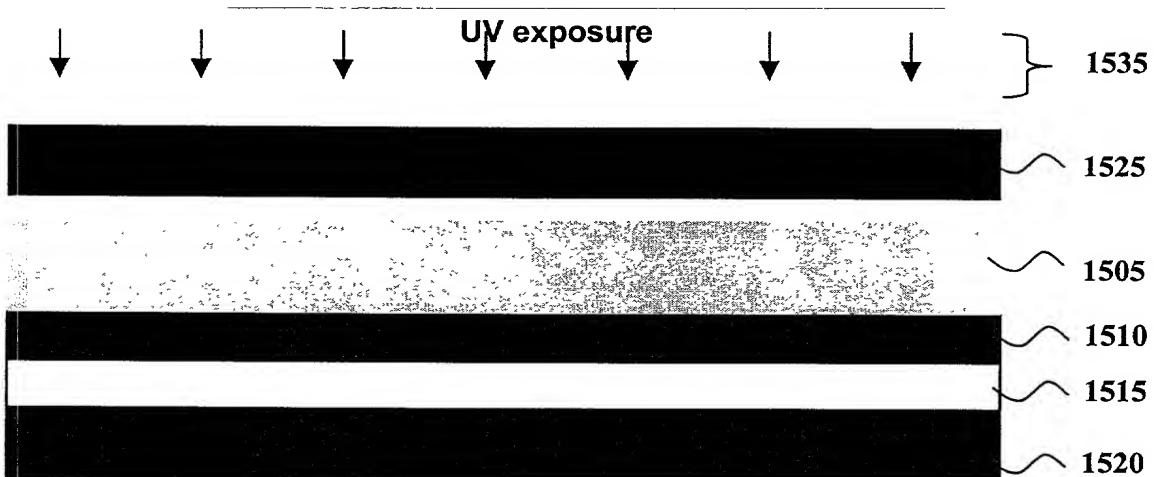


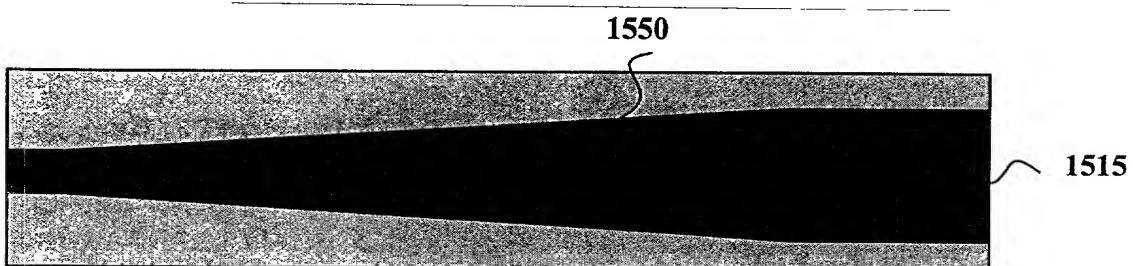
Si tapered down/narrow section top view

Fig 18D



**Fig. 20**





### Si tapered up/wide section top view

**FIG. 21E**

the *Journal of the Royal Society of Medicine* in 1926, and in 1928 he was elected a fellow of the Royal Society of Medicine.

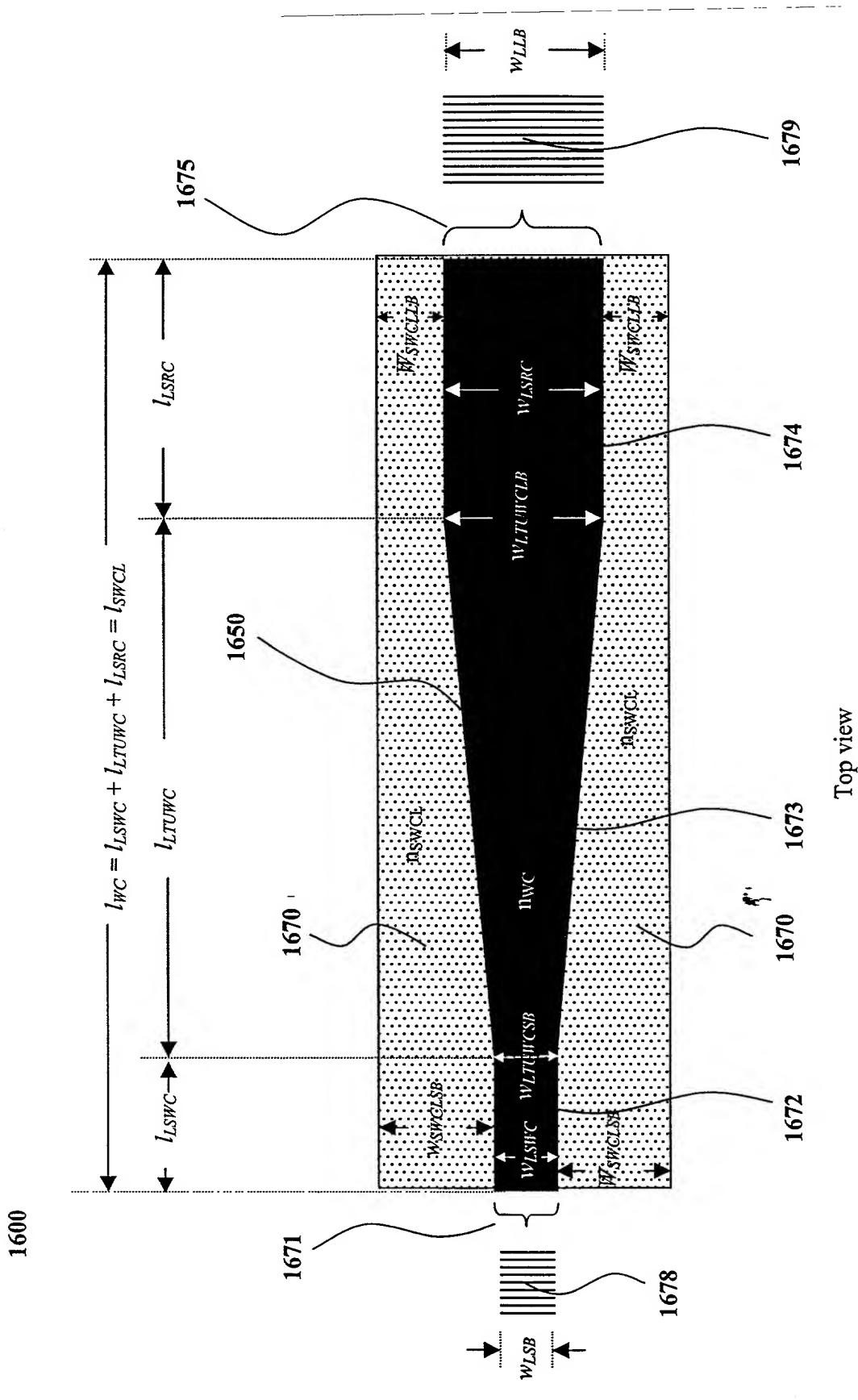


FIG. 22A

1600

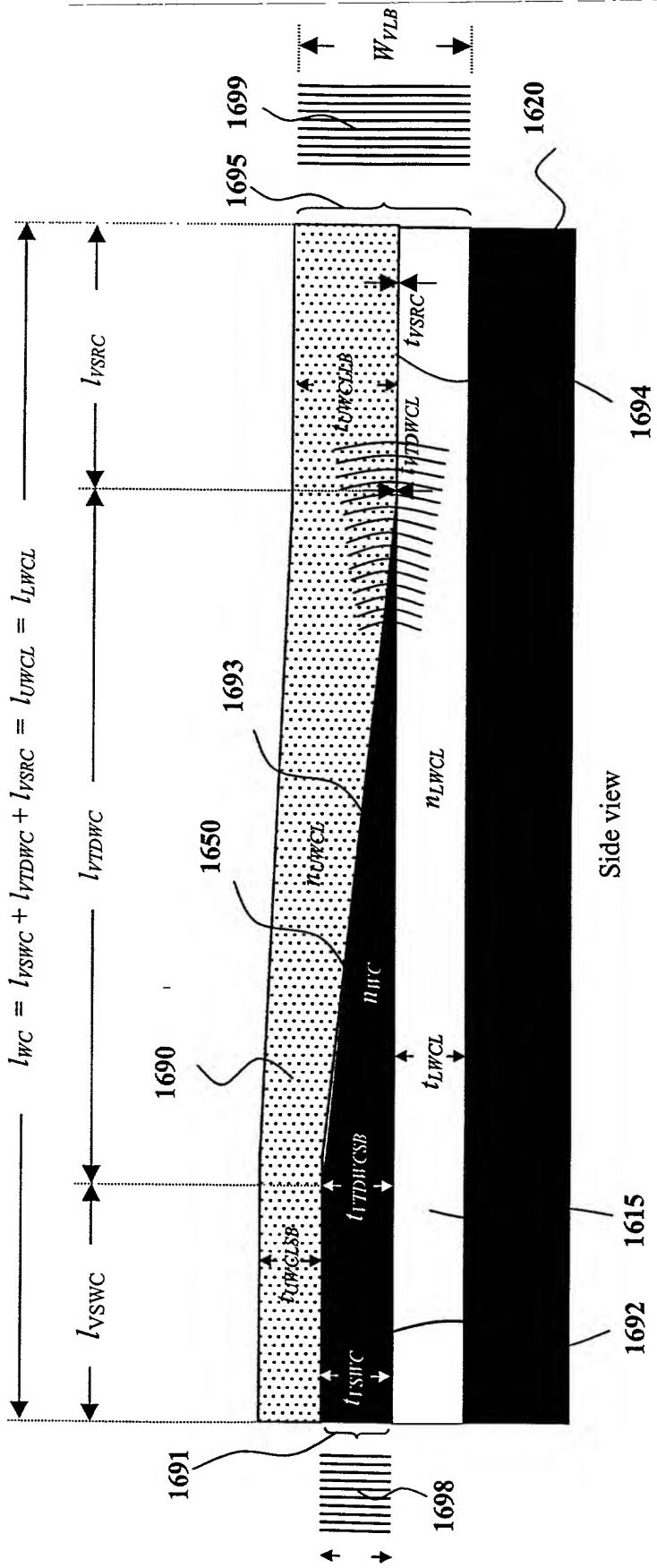


FIG 22B

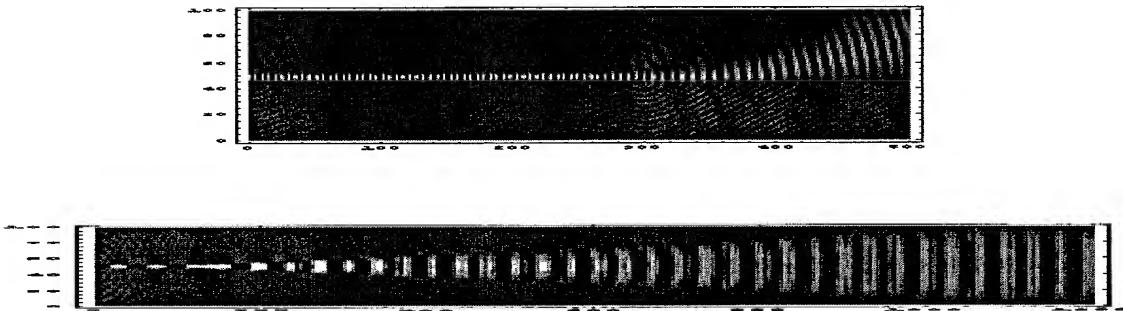
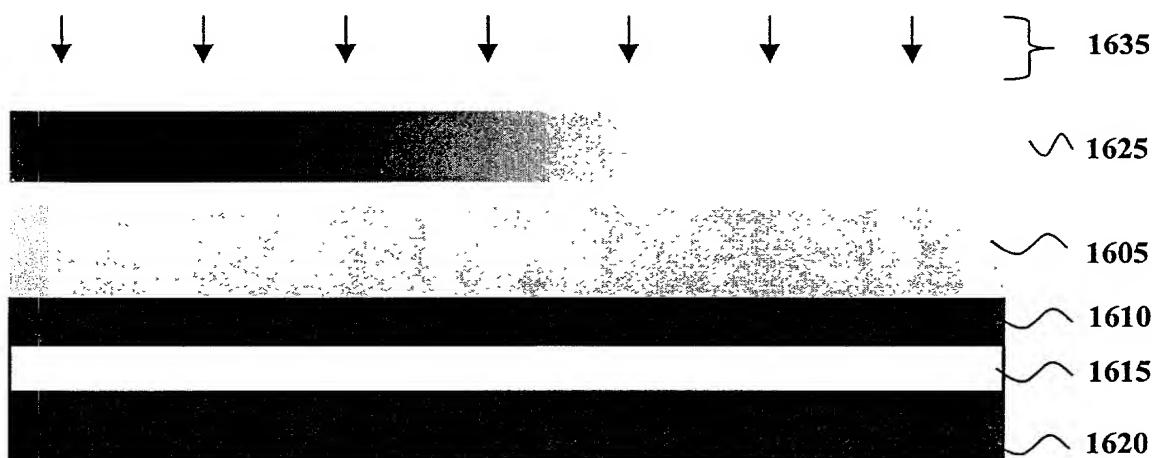


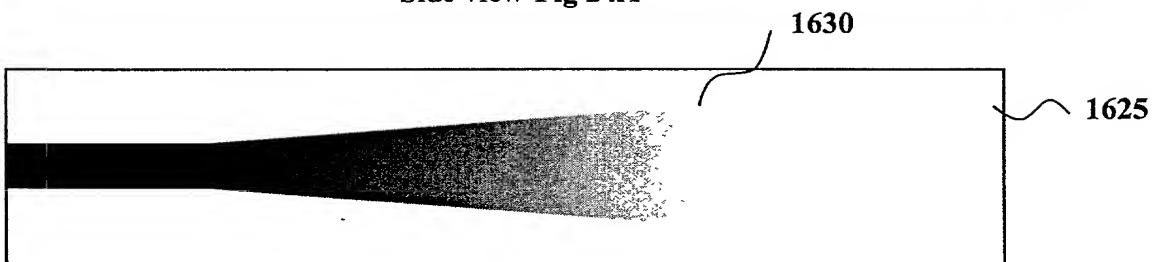
FIG 23

THE GENEALOGY

## UV exposure

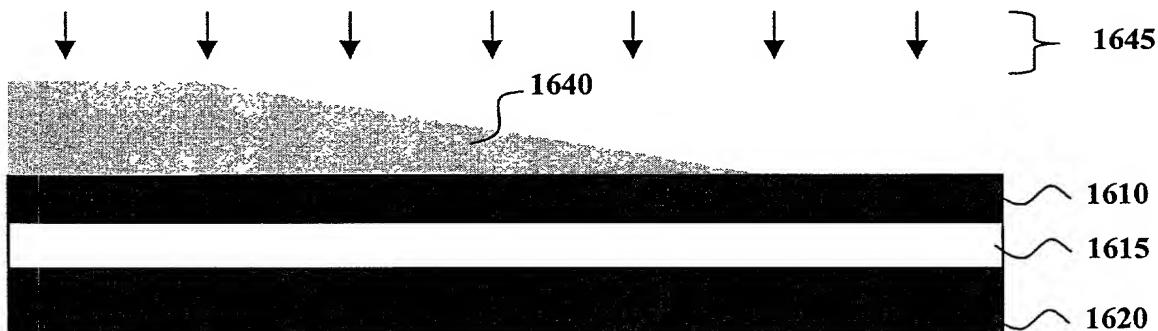


Side view-Fig 24A

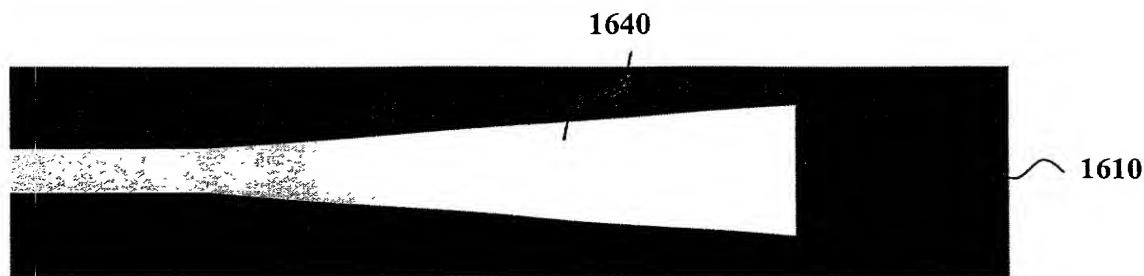


### Mask top view-Fig 24B

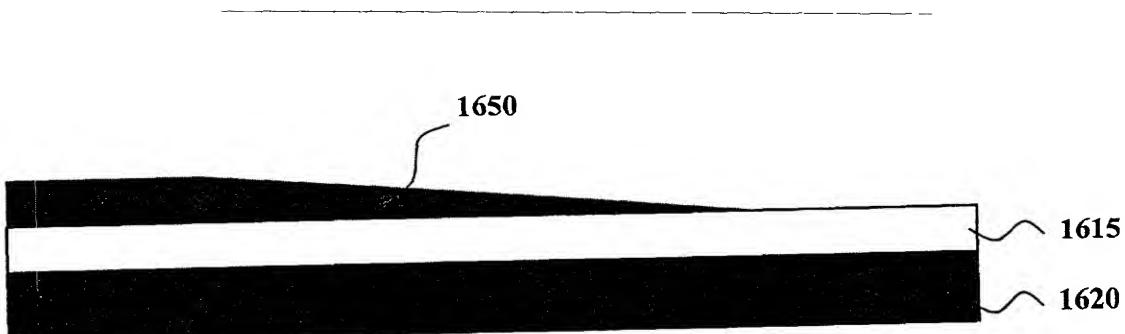
## Dry etching



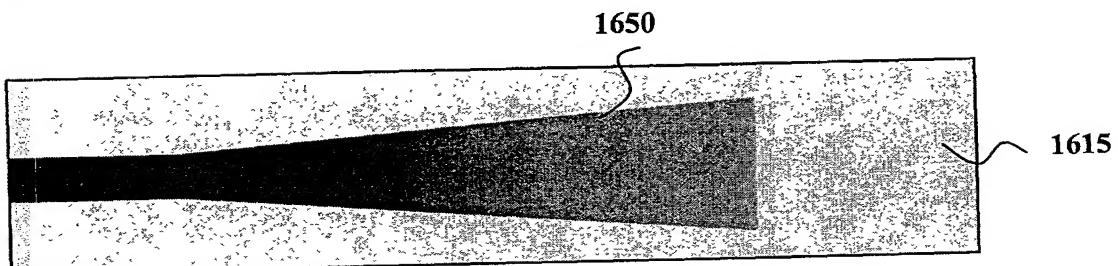
### Side view-FIG



### Photoresist pattern top view-FIG24D



Side view-FIG 24E



Si tapered up/wide section top view

FIG. 24F

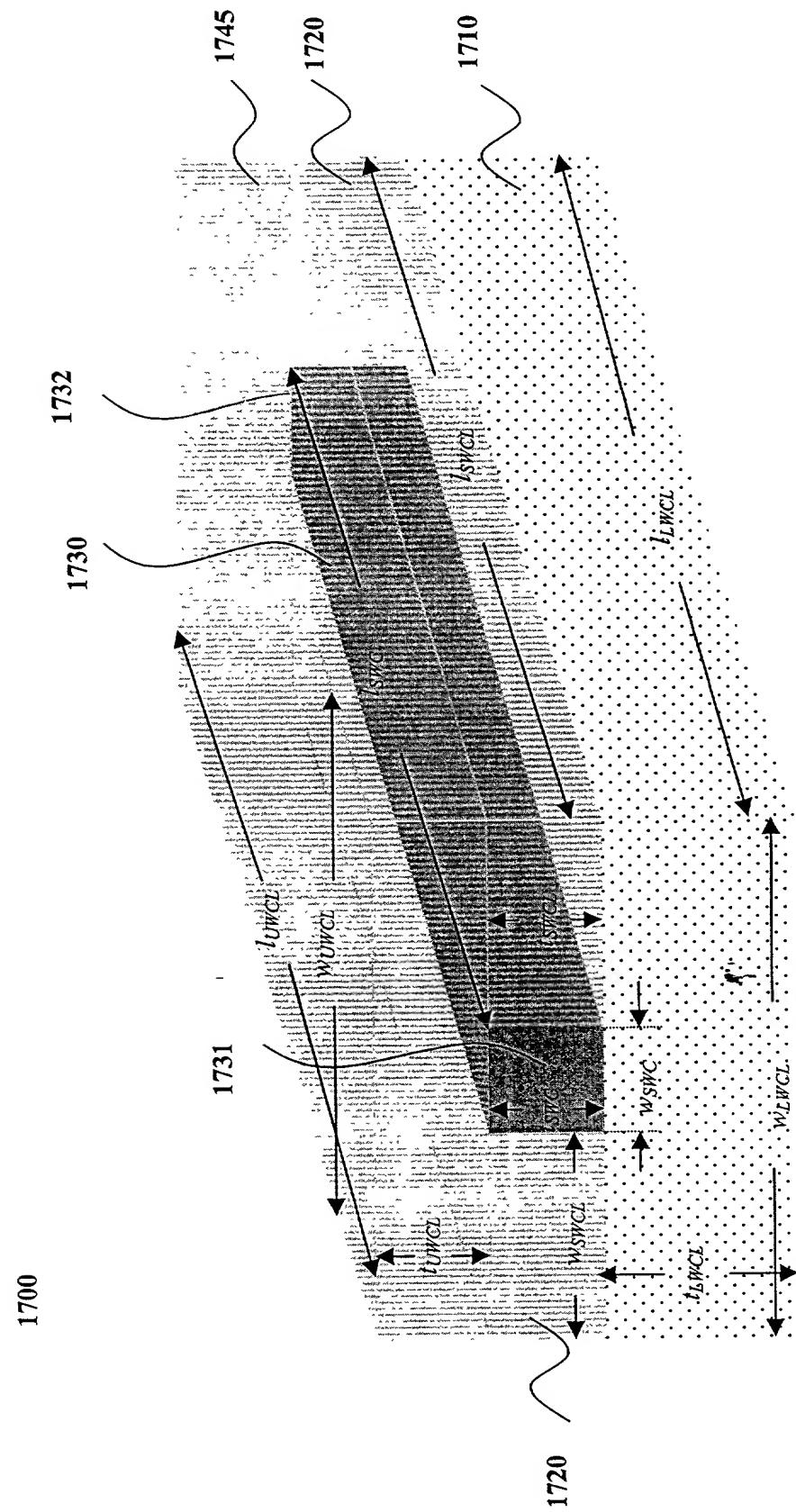
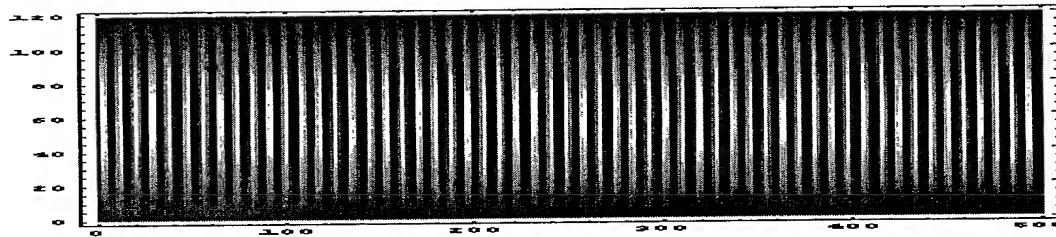
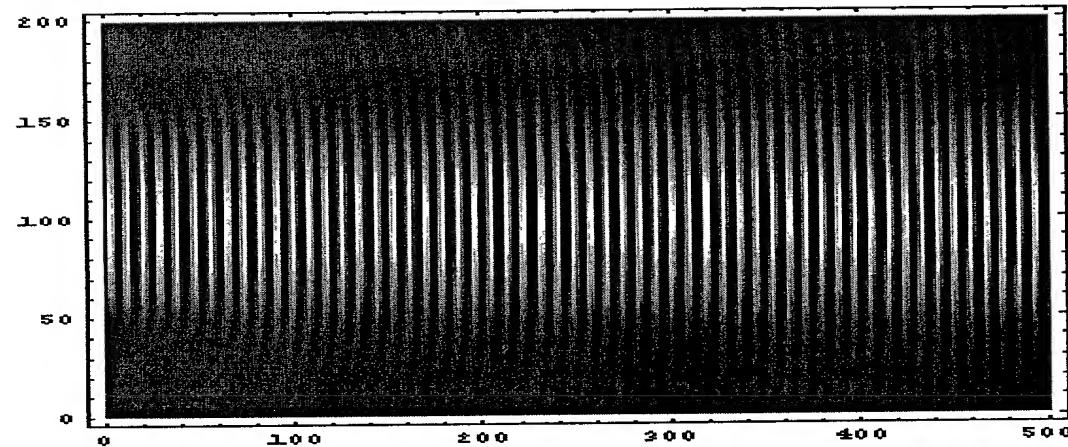


FIG 25



side view



top view

**FIG 26**

Fig 27A

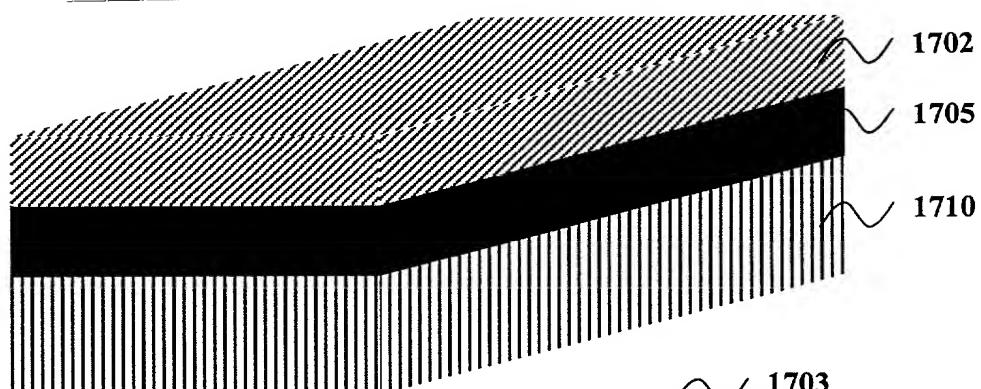


Fig 27B

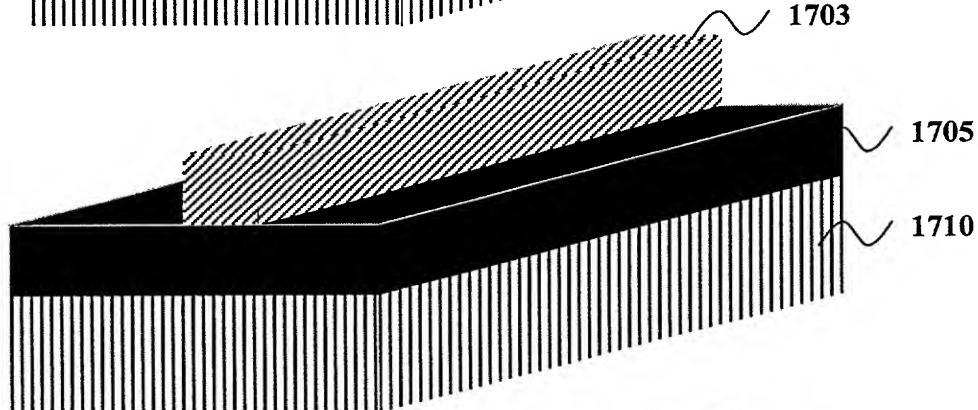


Fig 27C

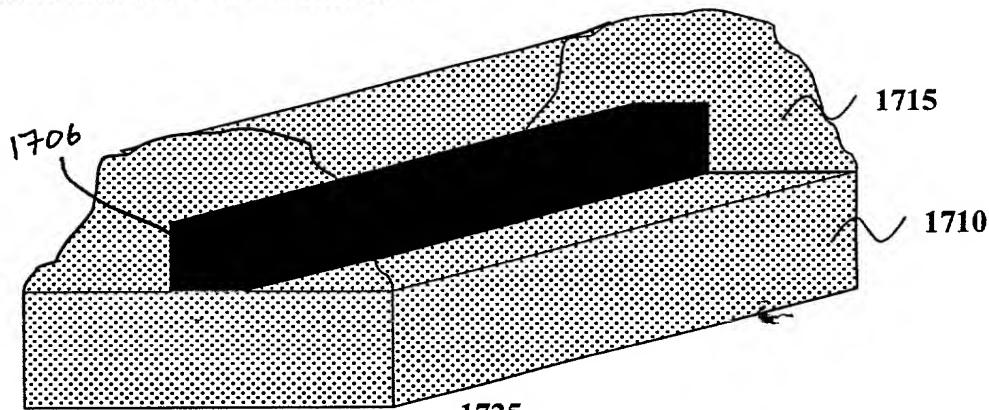
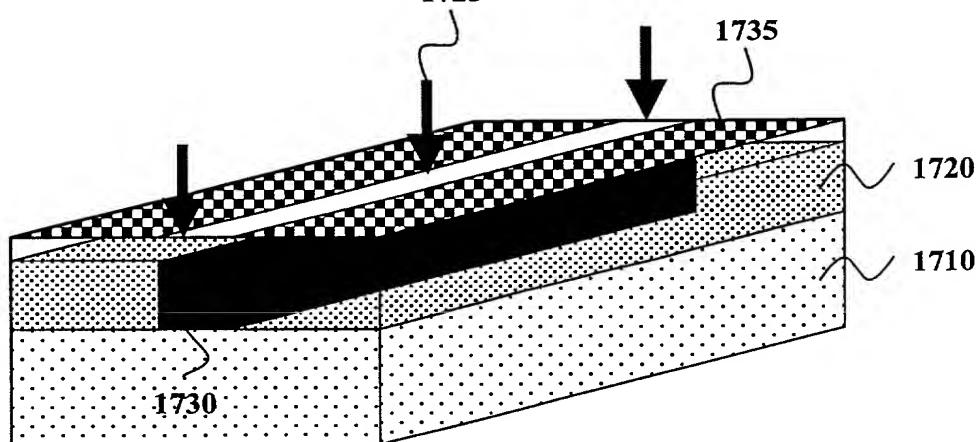


Fig 27D



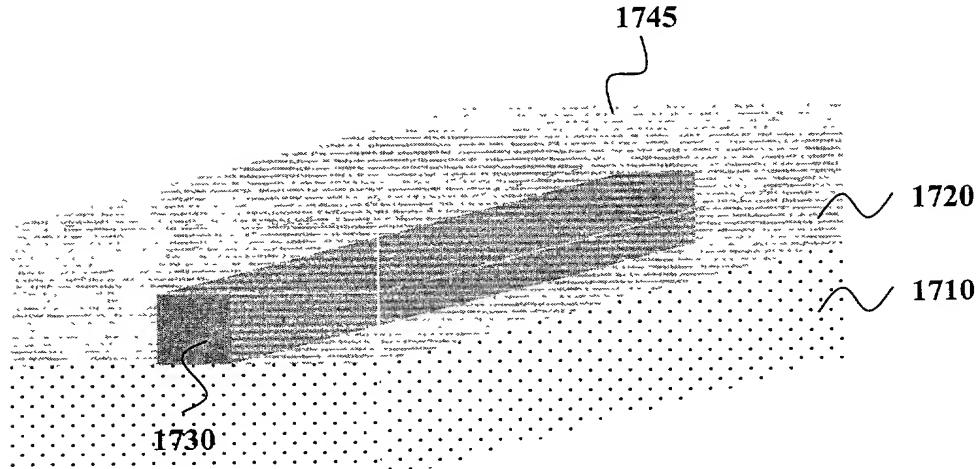


FIG. 27E

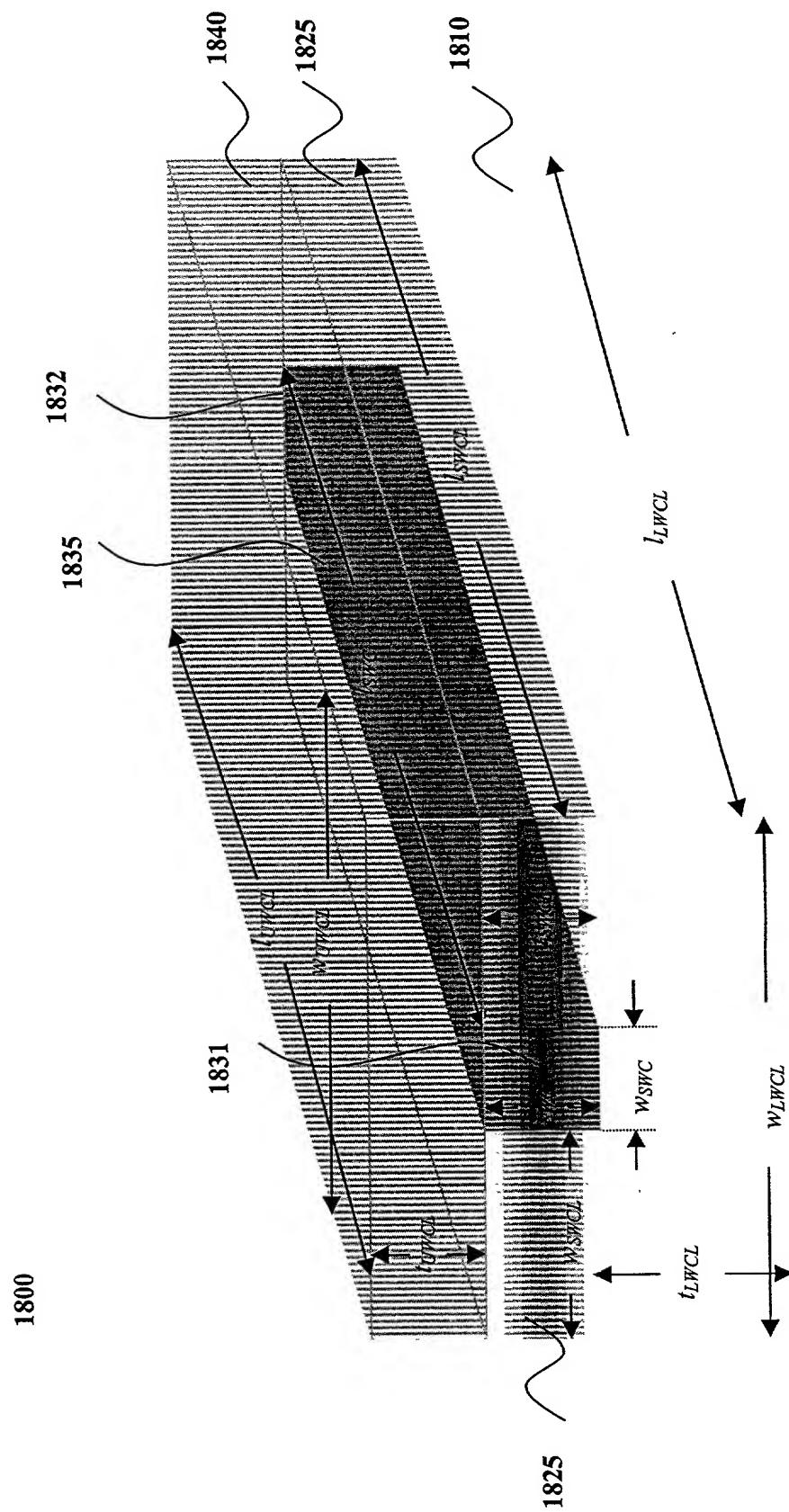
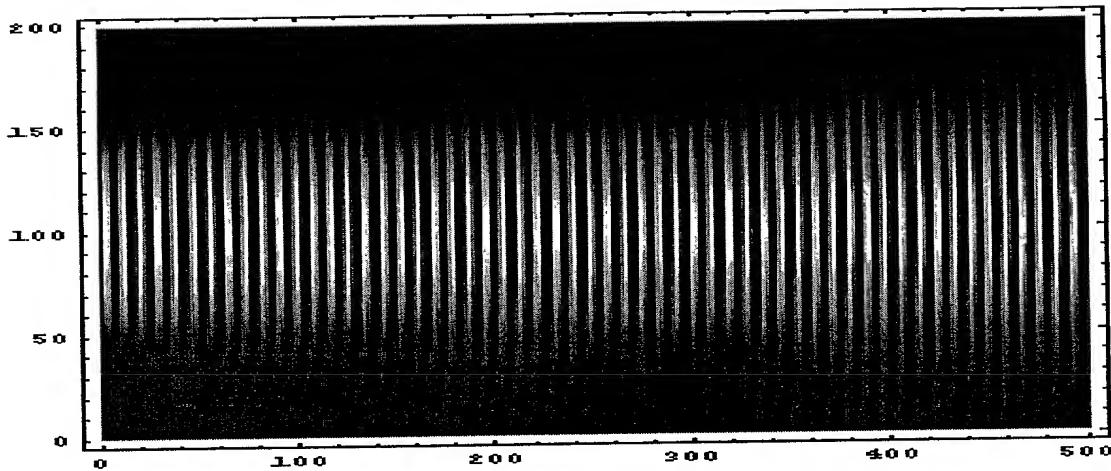
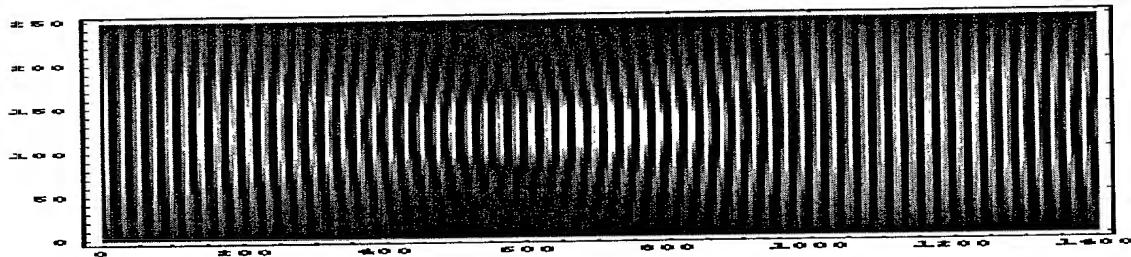


FIG 28



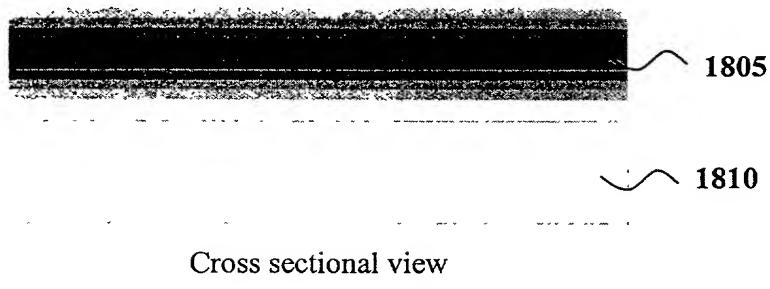
top view



side view

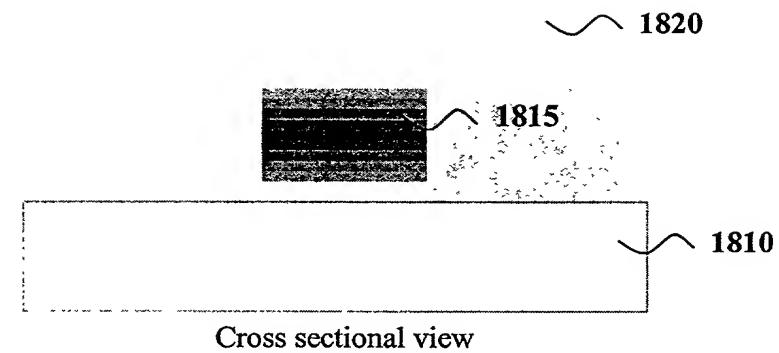
**Fig 29**

**FIG 30A**



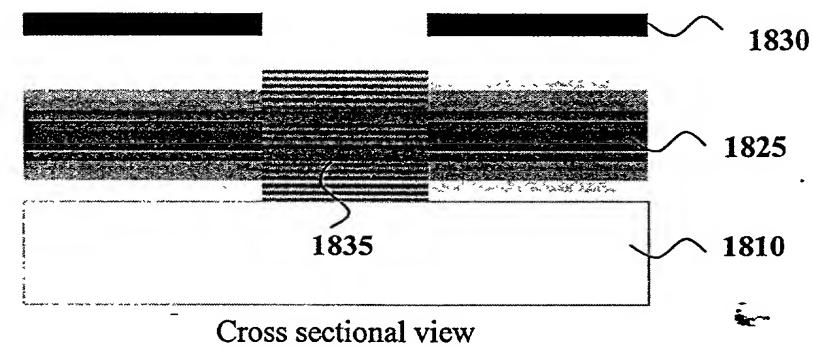
Cross sectional view

**FIG 30B**



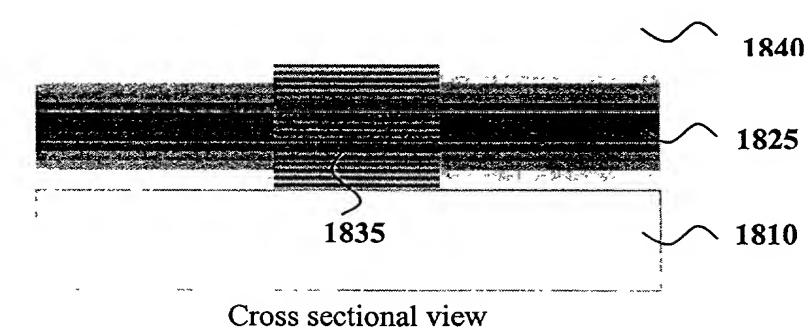
Cross sectional view

**FIG 30C**



Cross sectional view

**FIG 30D**



Cross sectional view

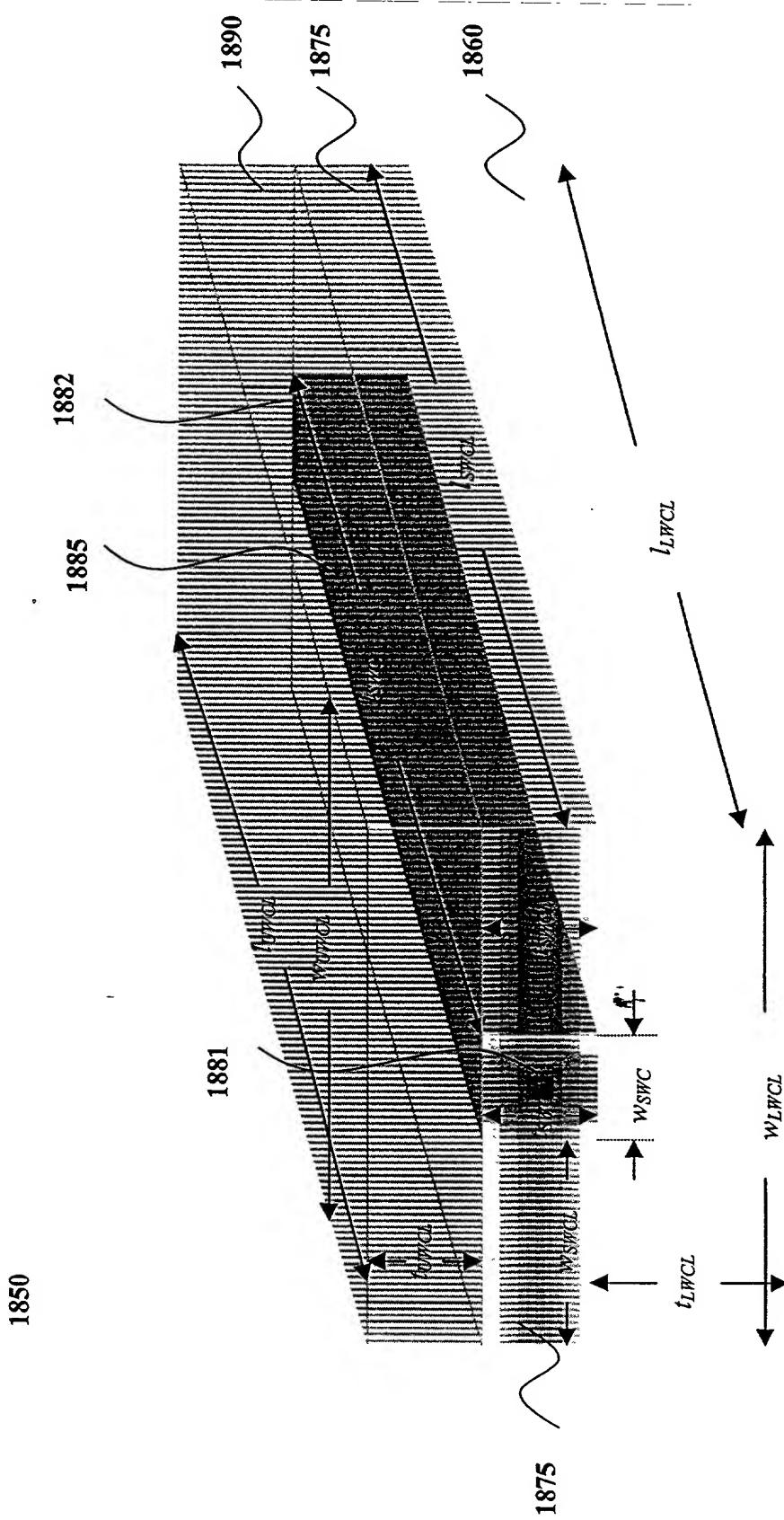
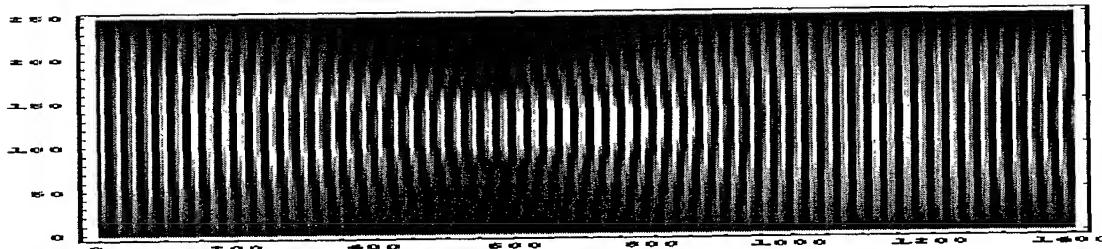
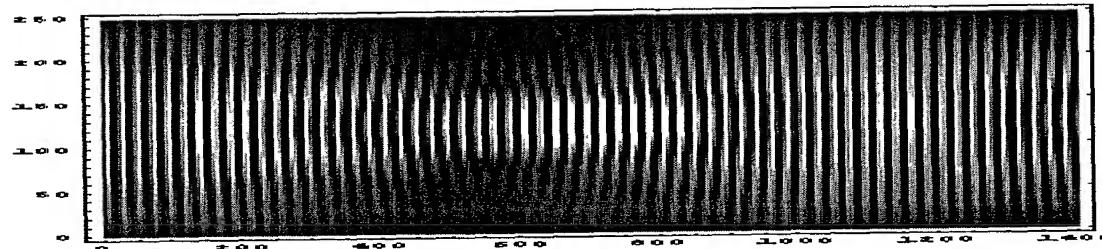


FIG 31

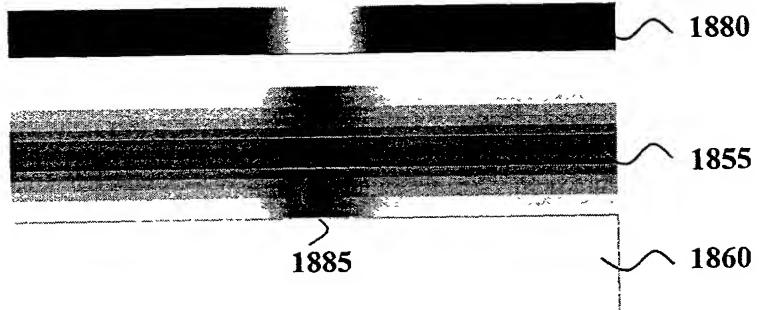


top view



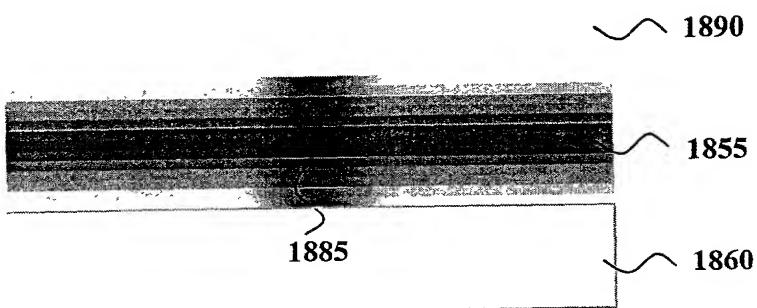
side view

Fig 32



Cross sectional view

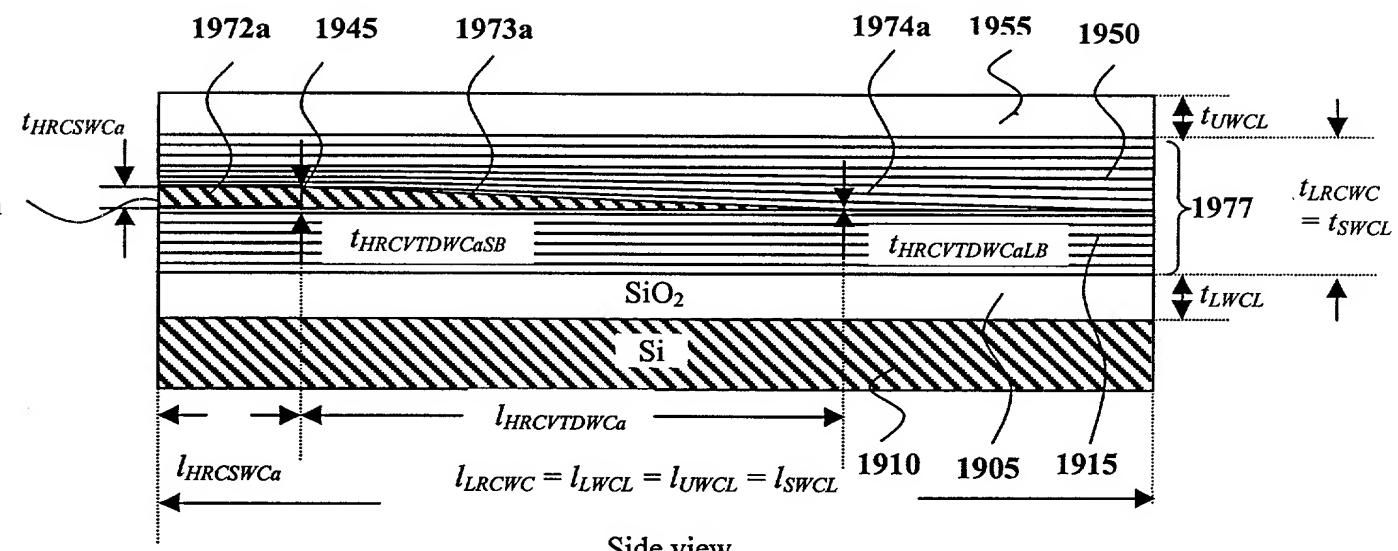
**FIG 33A**



Cross sectional view

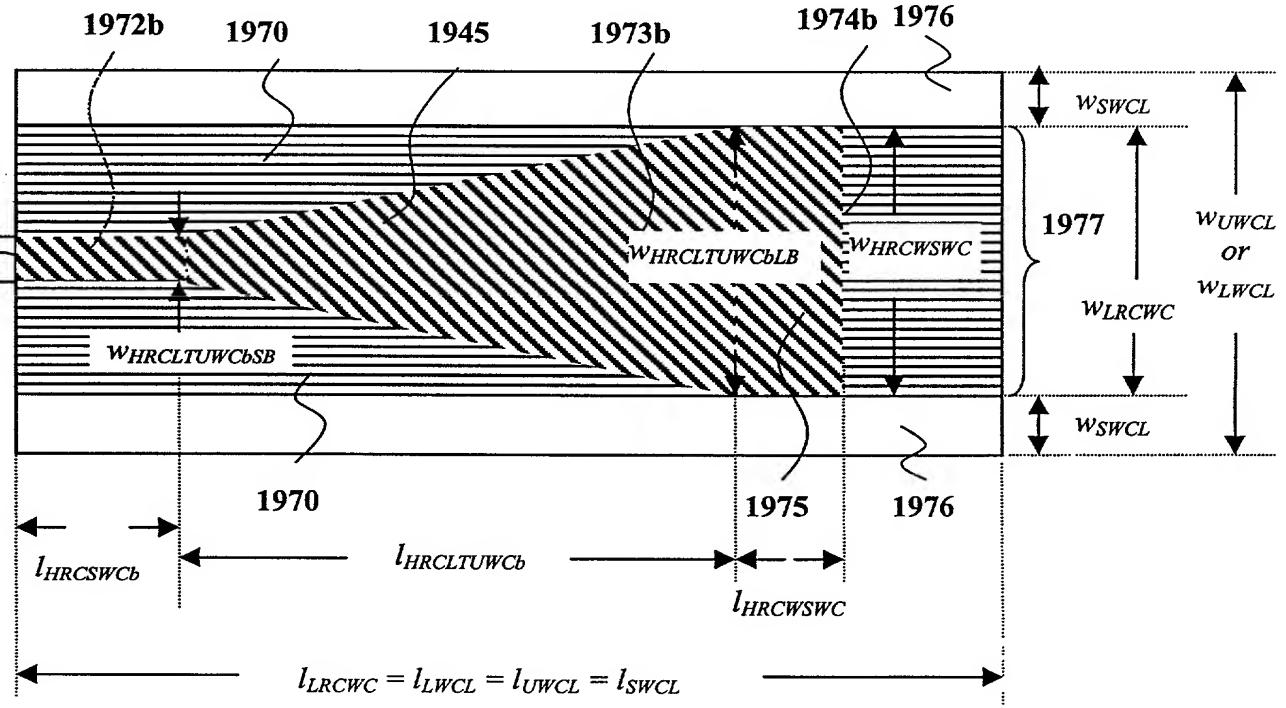
**FIG. 33B**

1900



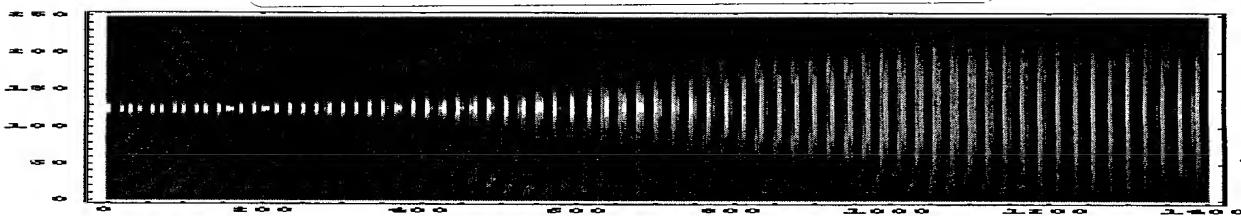
Side view

FIG 34A

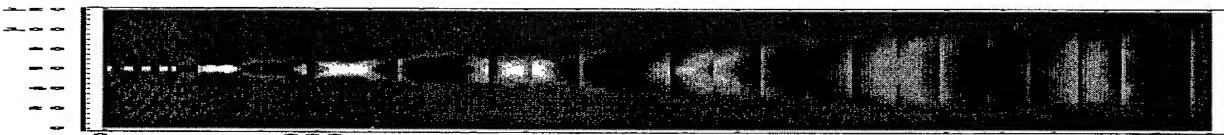


Top view

FIG 34B



Side view



Top view

Fig 35

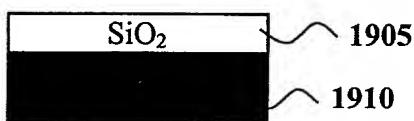


FIG 36A

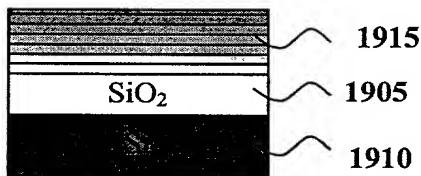


FIG 36B

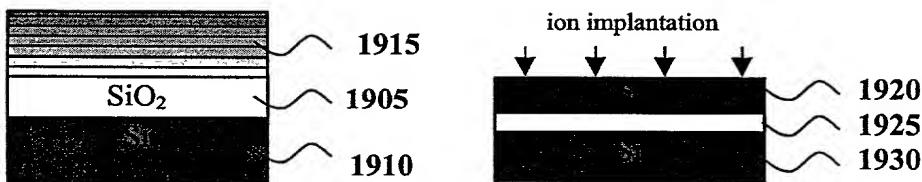


FIG 36C

FIG 36D

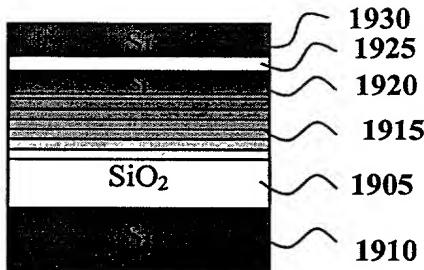


FIG 36E

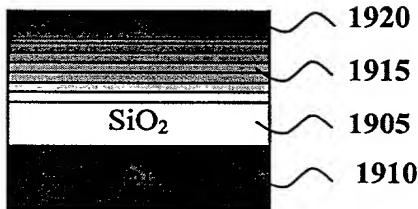
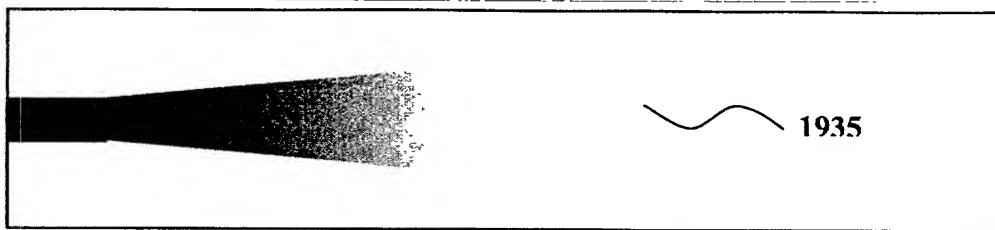
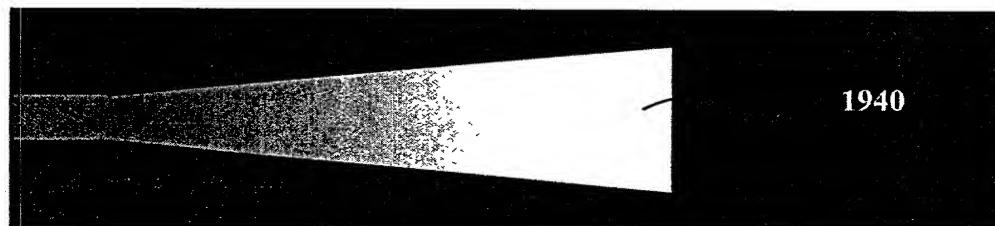


FIG 36F

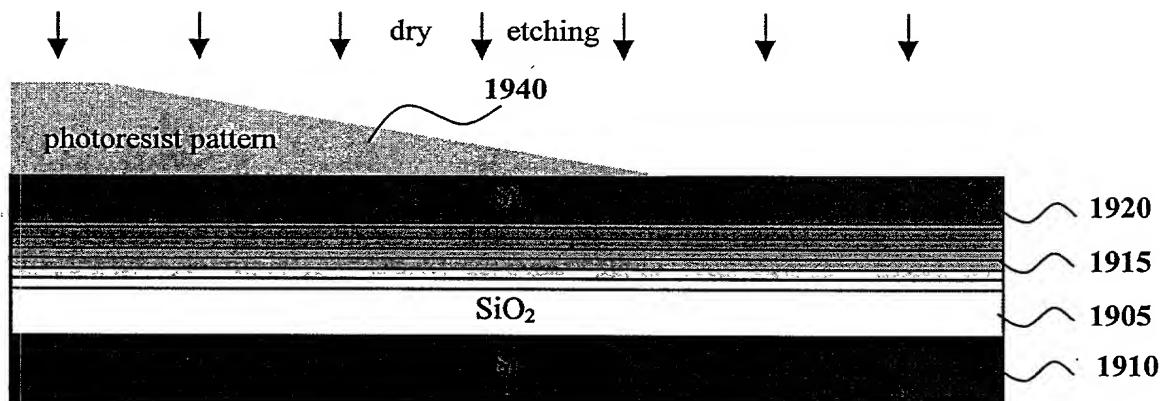


Mask top view  
**FIG 36G**



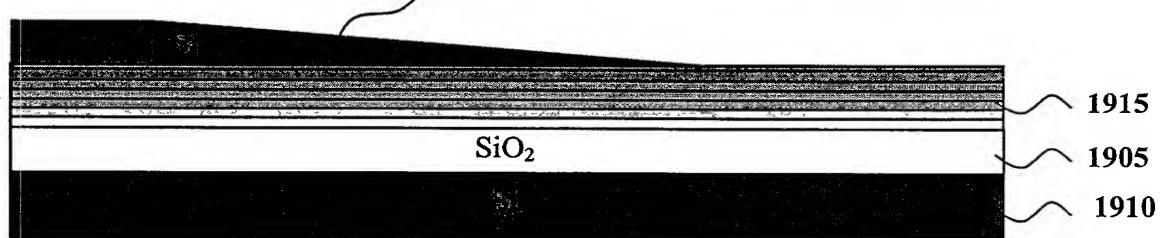
photoresist pattern top view

**FIG 36H**

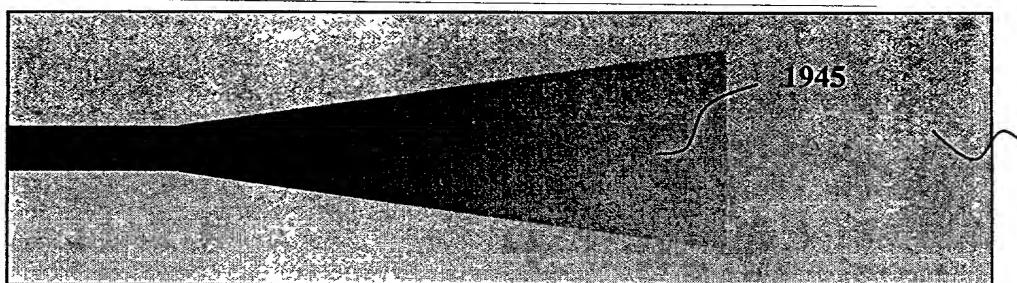


Side view  
**FIG 36I**

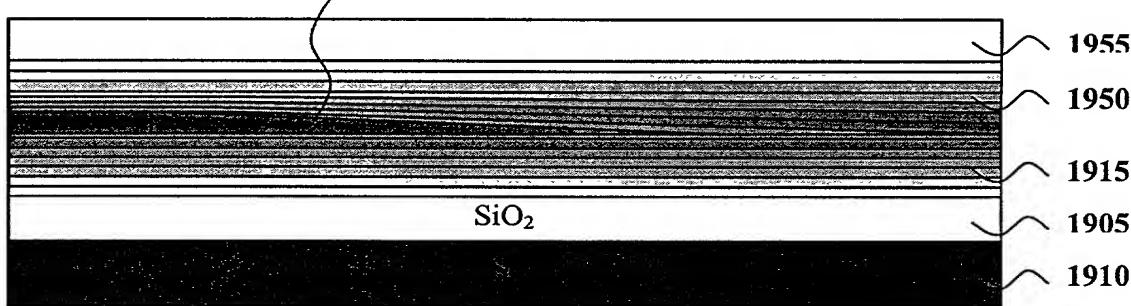
1945



Side view  
**FIG 36J**



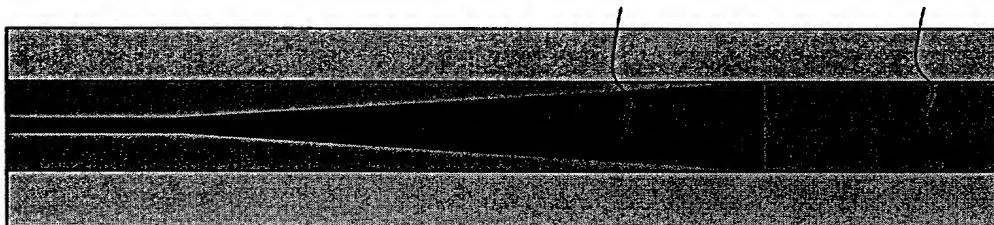
Top view  
**FIG 36K**



Side view  
**FIG 36L**



mask  
**FIG 36M** 1945 1965



Top view  
**FIG. 36N**

2000

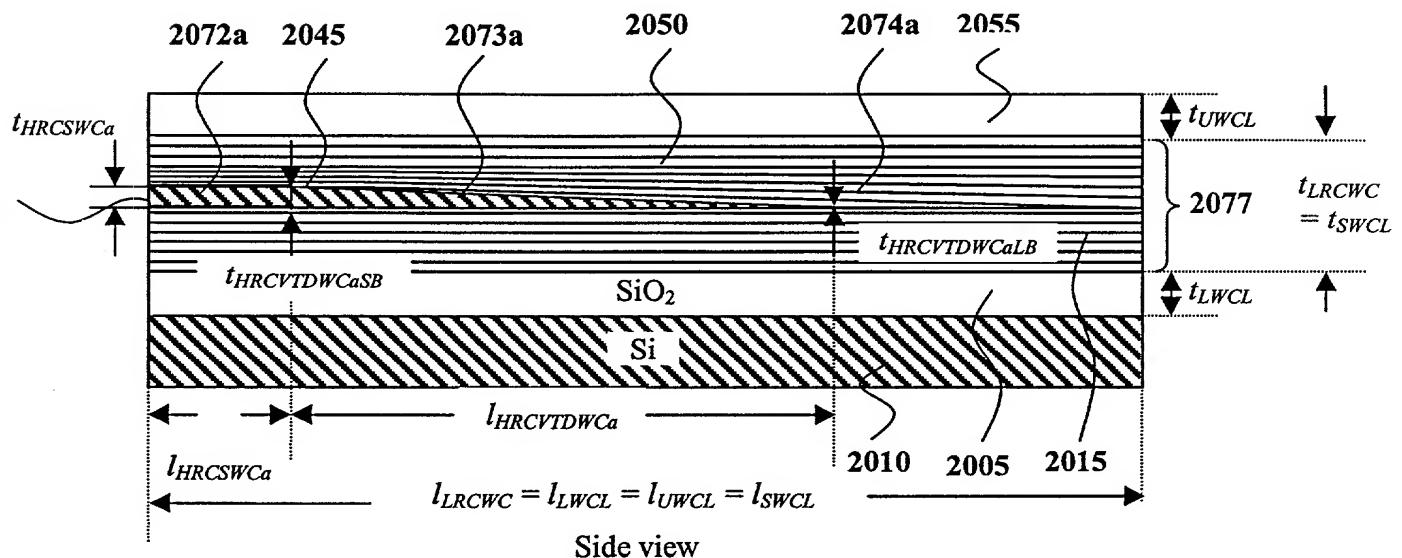
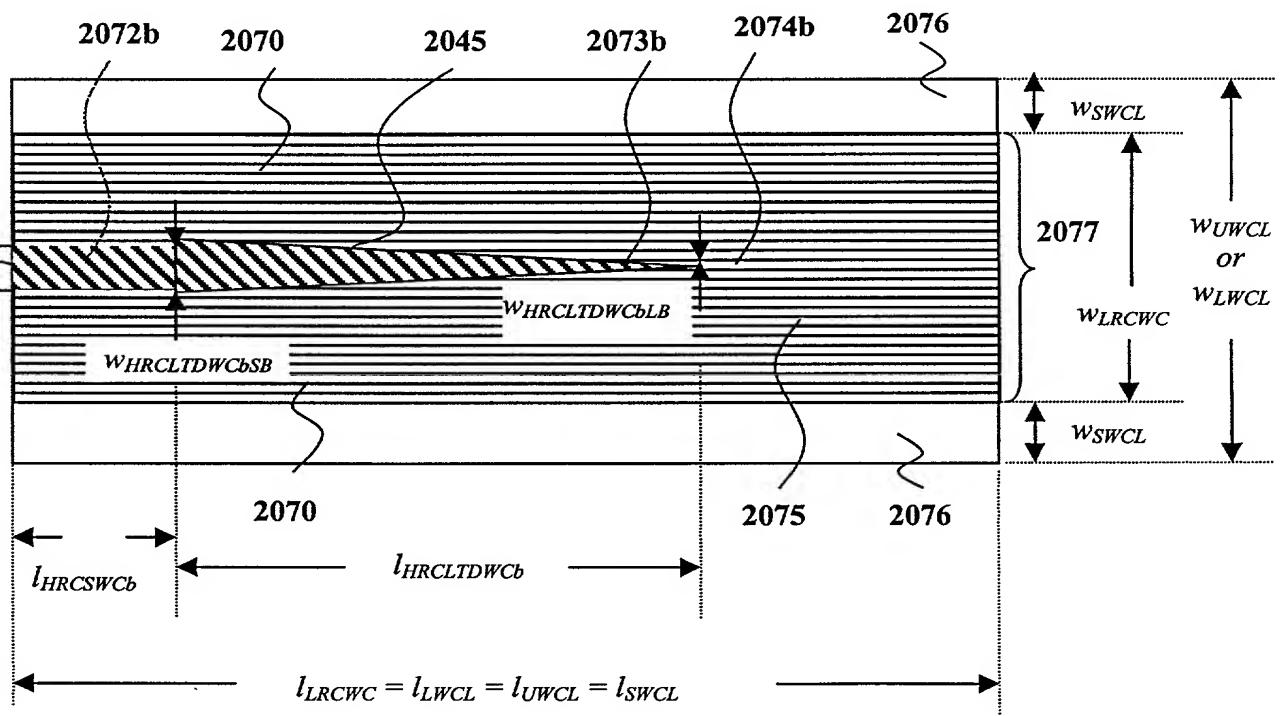
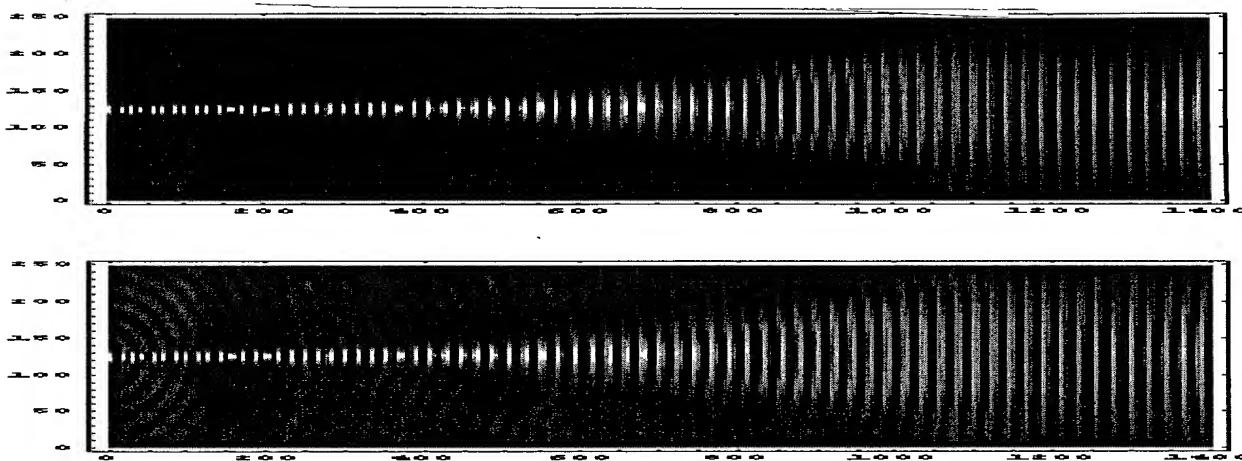


FIG 37A



Top view

FIG 37B



**Fig 38**

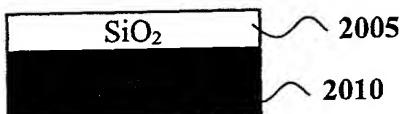


FIG 39A

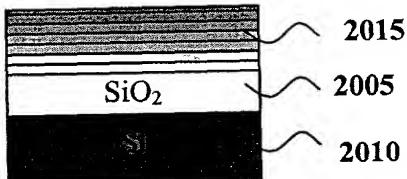


FIG 39B

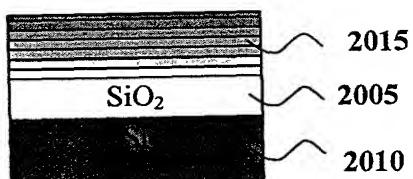


FIG 39C

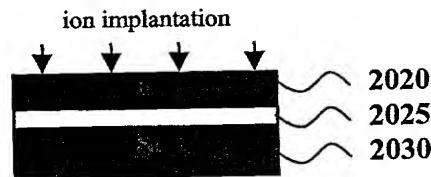


FIG 39D

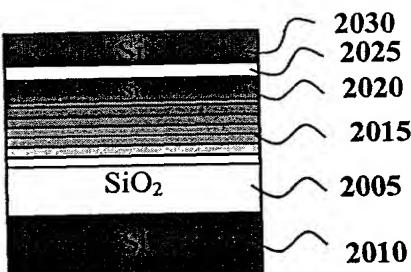


FIG 39E

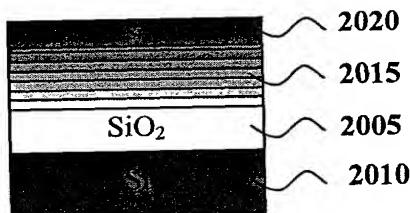
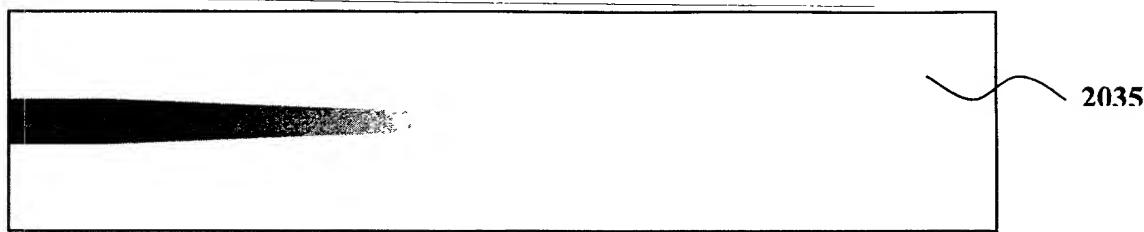
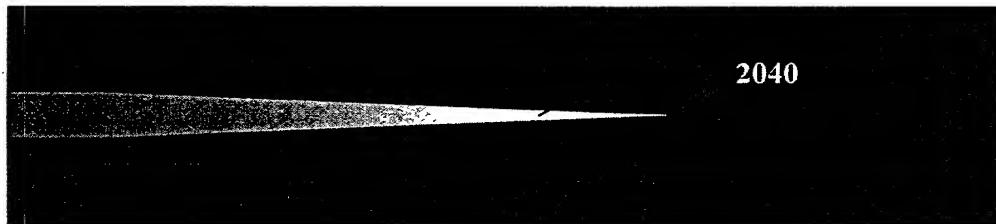


FIG 39F

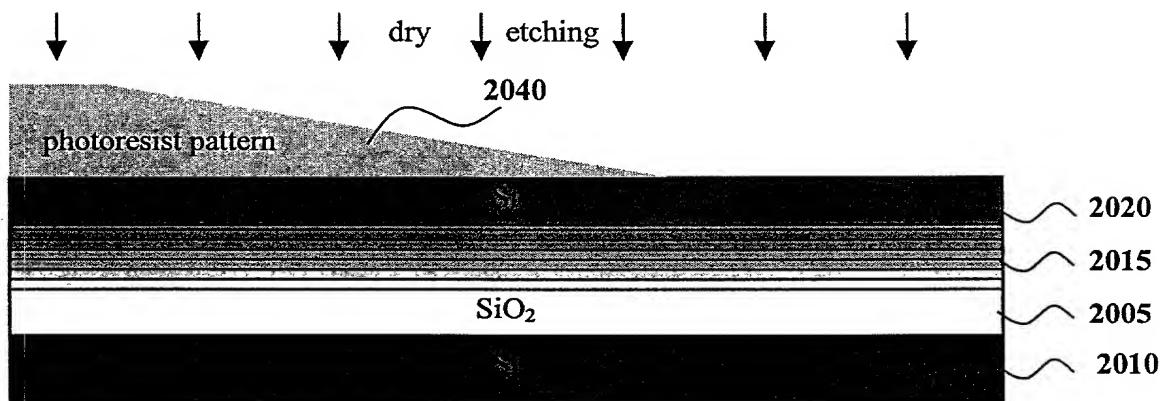


Mask top view  
**FIG 39G**

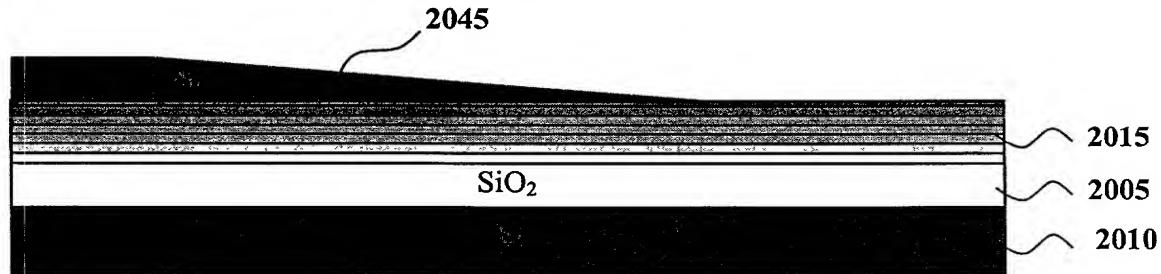


photoresist pattern top view

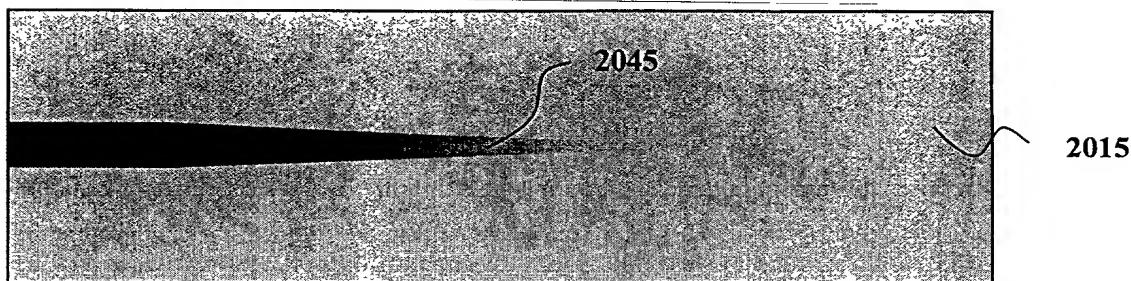
**FIG 39H**



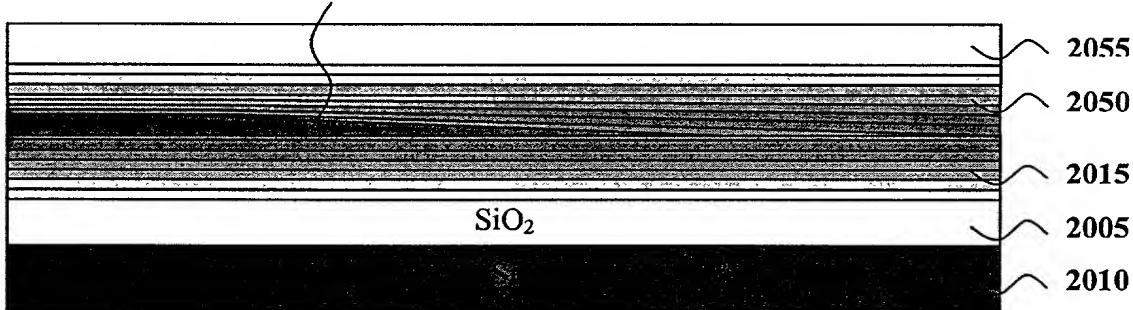
Side view  
**FIG 39I**



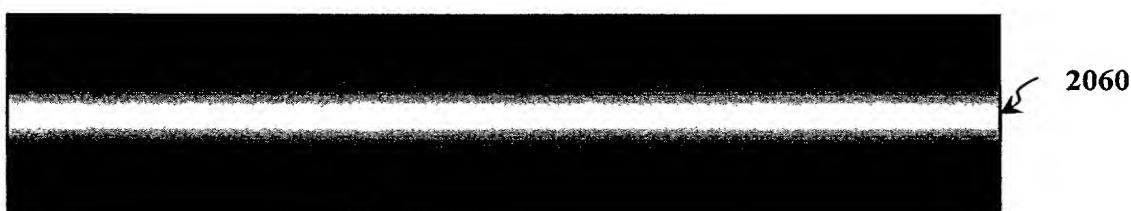
Side view  
**FIG 39J**



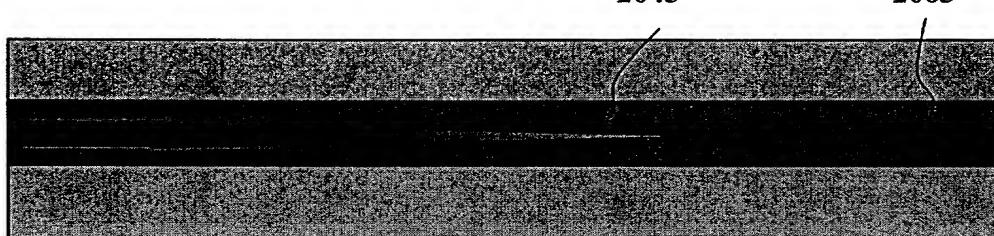
Top view  
2045 FIG 39K



Side view  
FIG 39L



mask  
FIG 39M 2045 2065



Top view  
FIG. 39N

2100

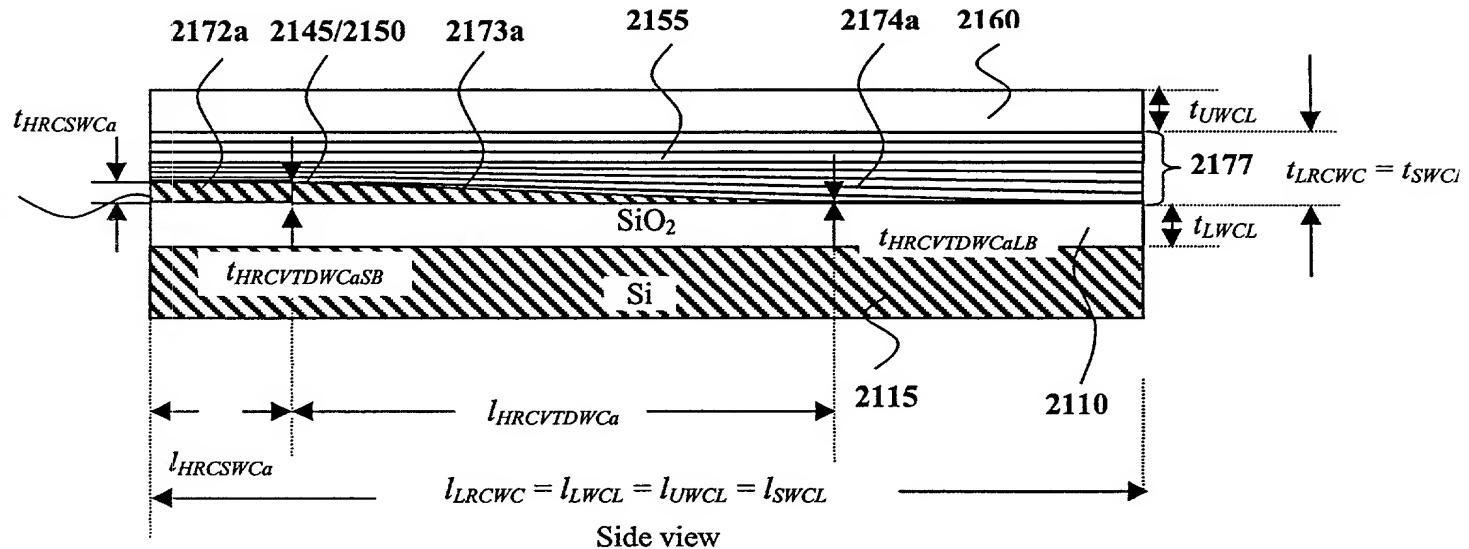
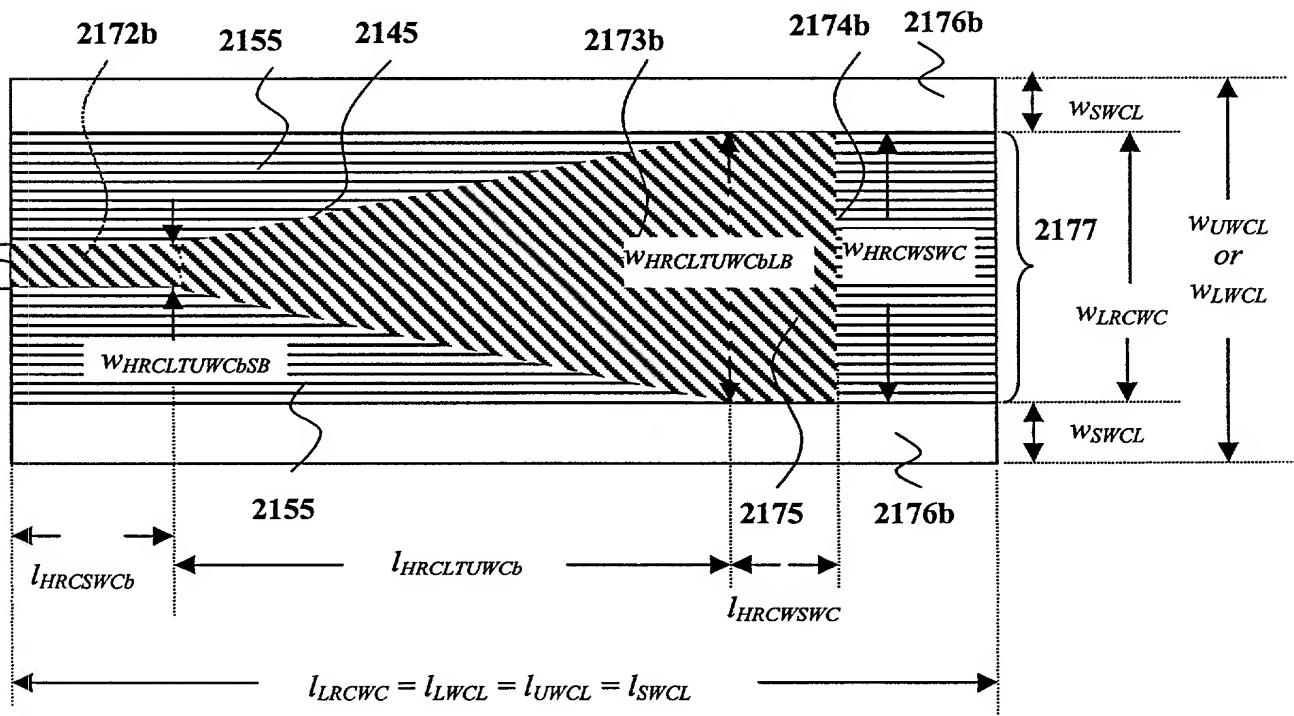
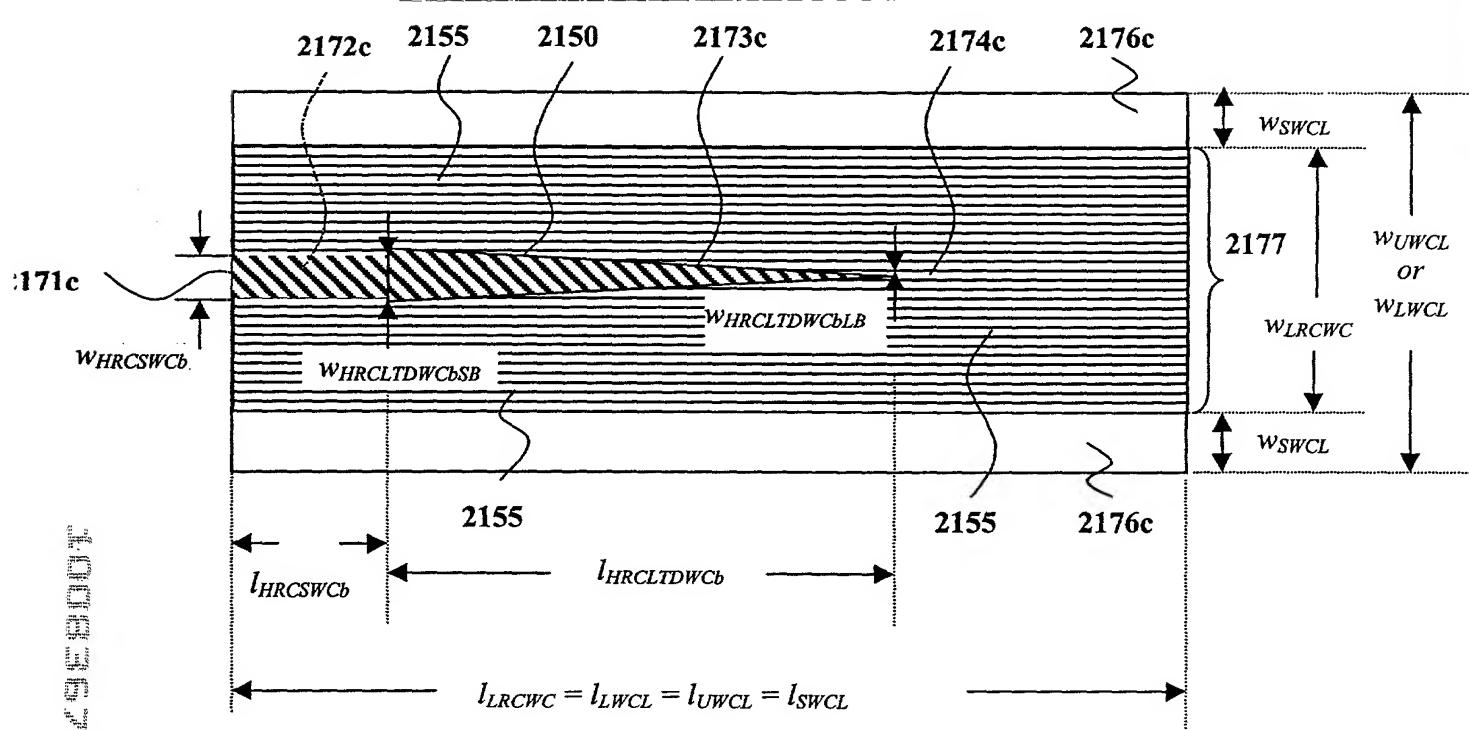


FIG 40A



Top view

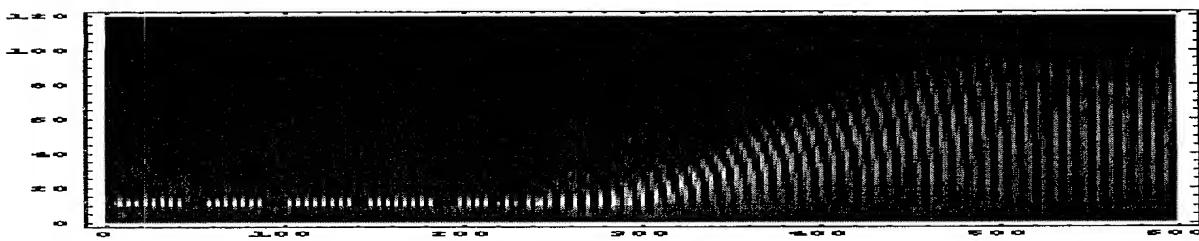
FIG 40B



Top view

FIG 40C

Taper side launching



GRIN guide side launching

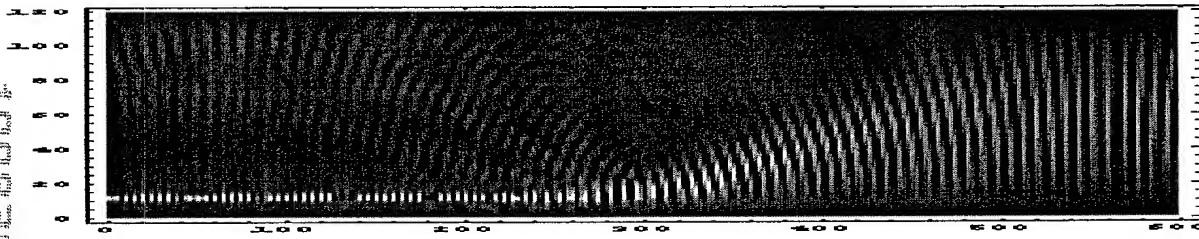
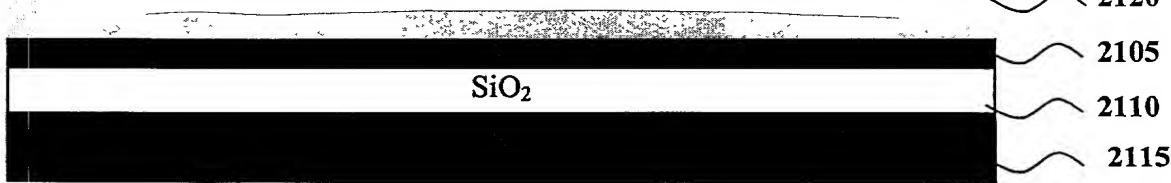
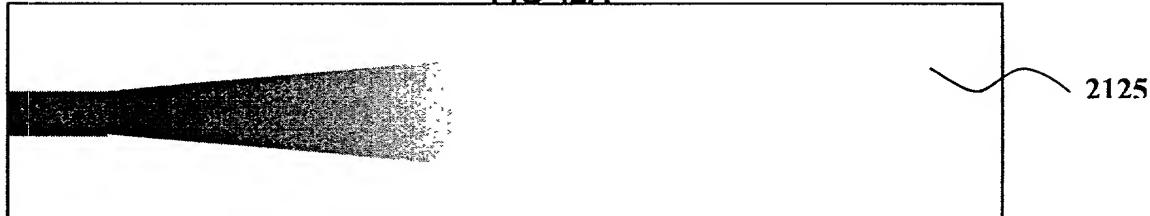


Fig 41

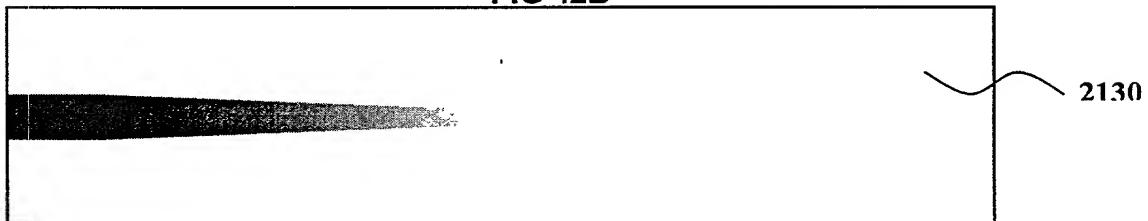


**FIG 42A**



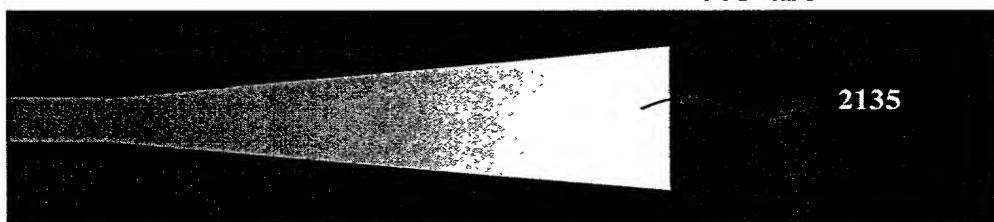
Mask top view

**FIG 42B**



Mask top view

**FIG 42C**



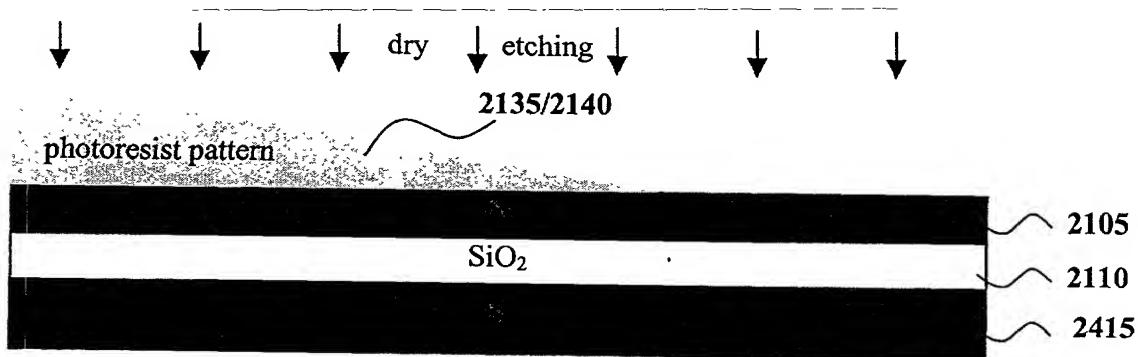
photoresist pattern top view

**FIG 42D**



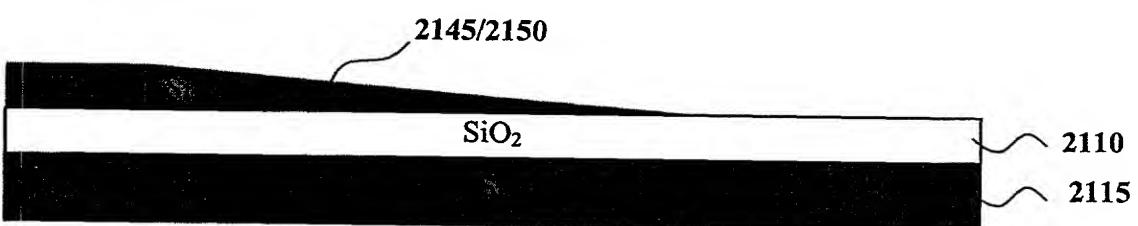
photoresist pattern top view

**FIG 42E**



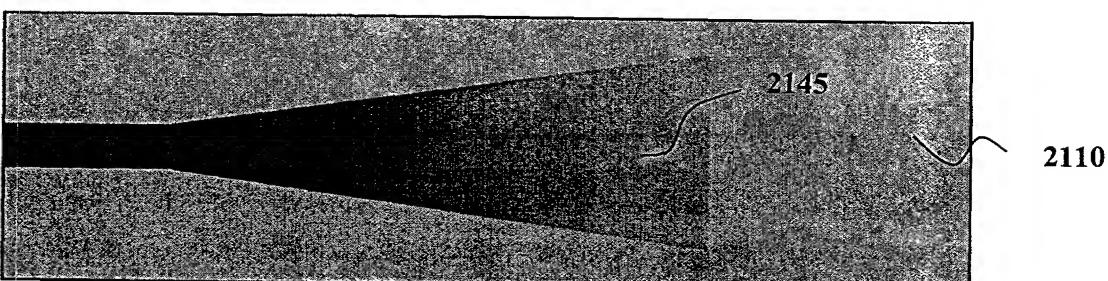
Side view

**FIG 42F**



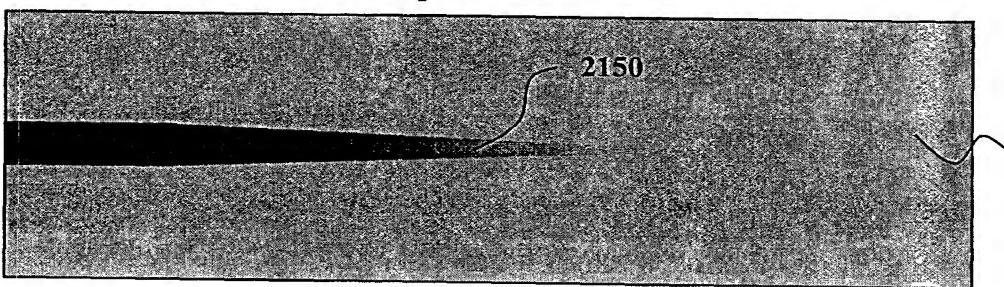
Side view

**FIG 42G**



Top view

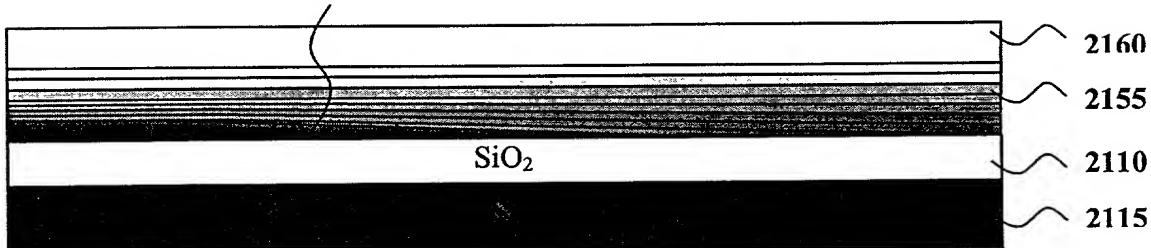
**FIG 42H**



Top view

**FIG 42I**

2145/2150



Side view

FIG 42J

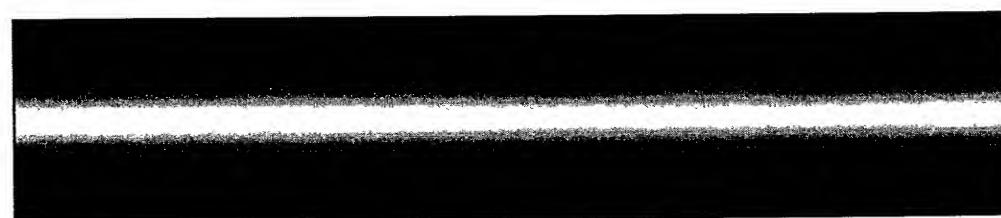
2165



mask

FIG 42K

2170

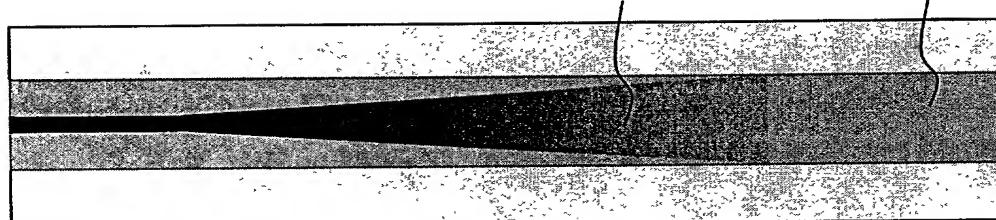


mask

FIG 42L

2145

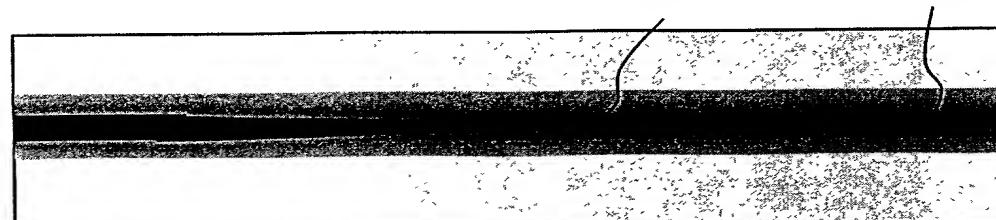
2185



Top view

2150

FIG 42M  
2190



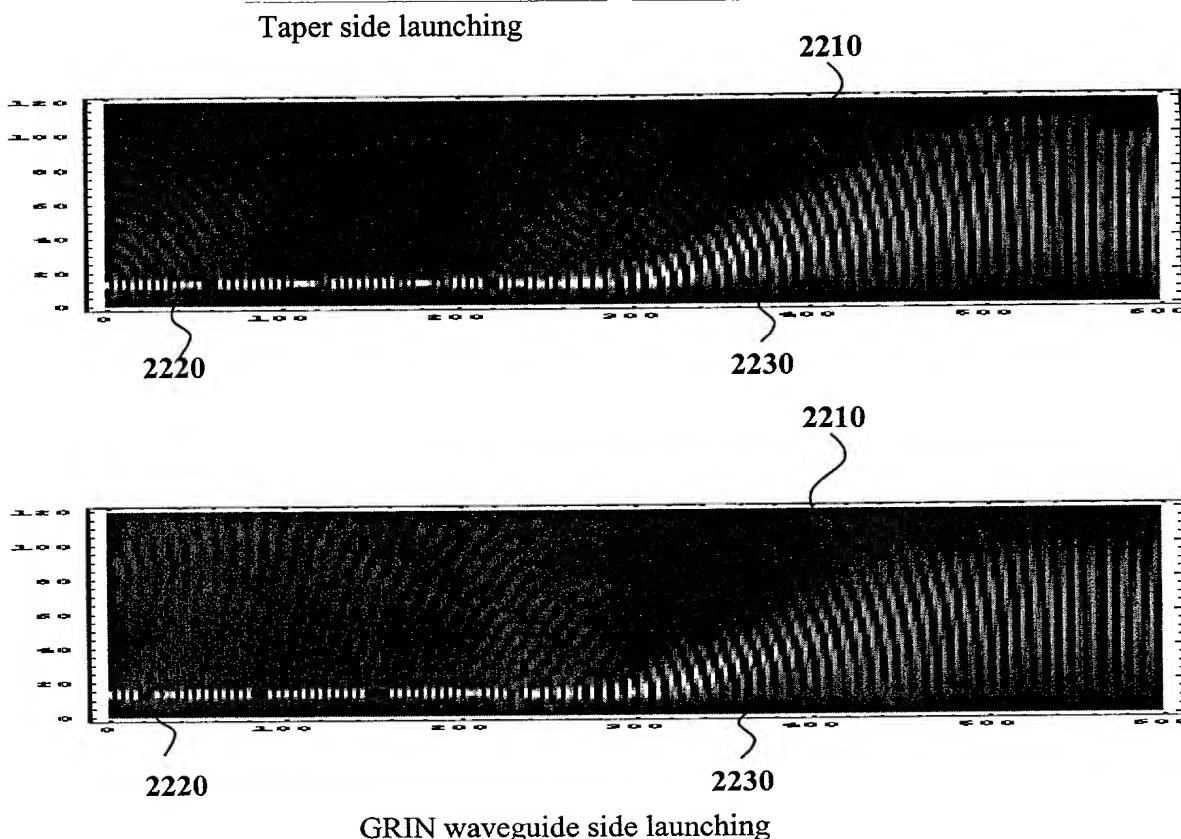


Fig 43

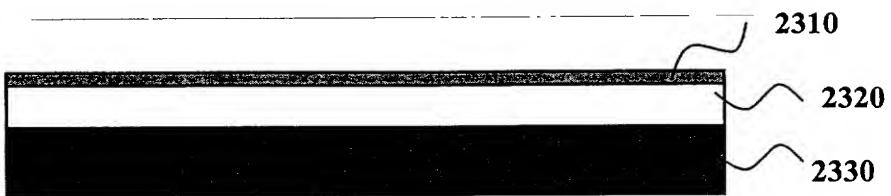


FIG 44A

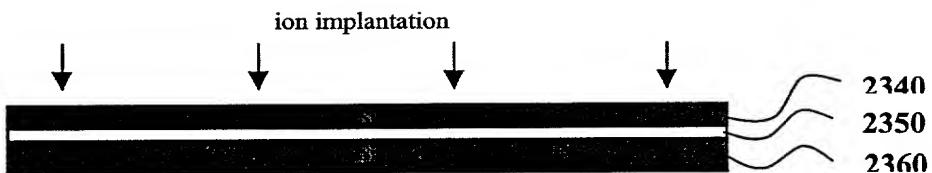


FIG 44B

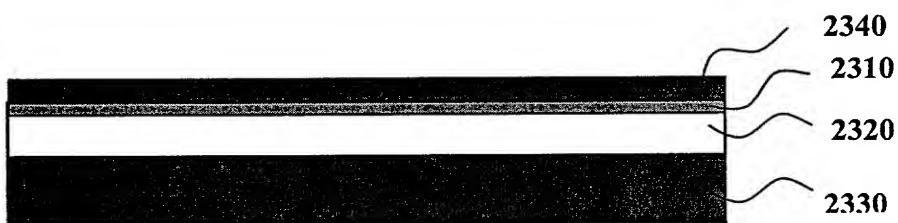


FIG 44C

Fig 45A

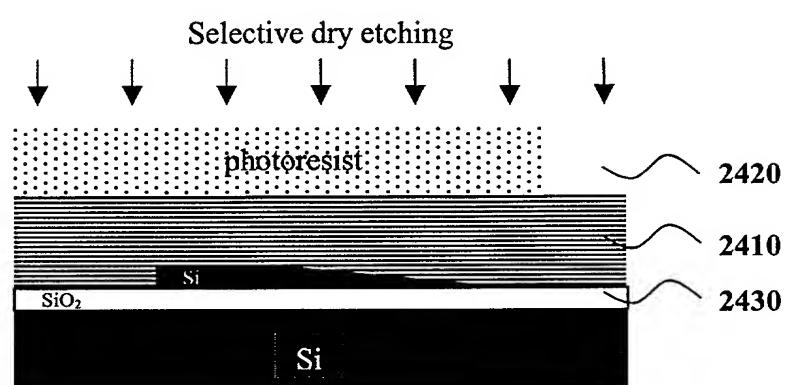


Fig 45B

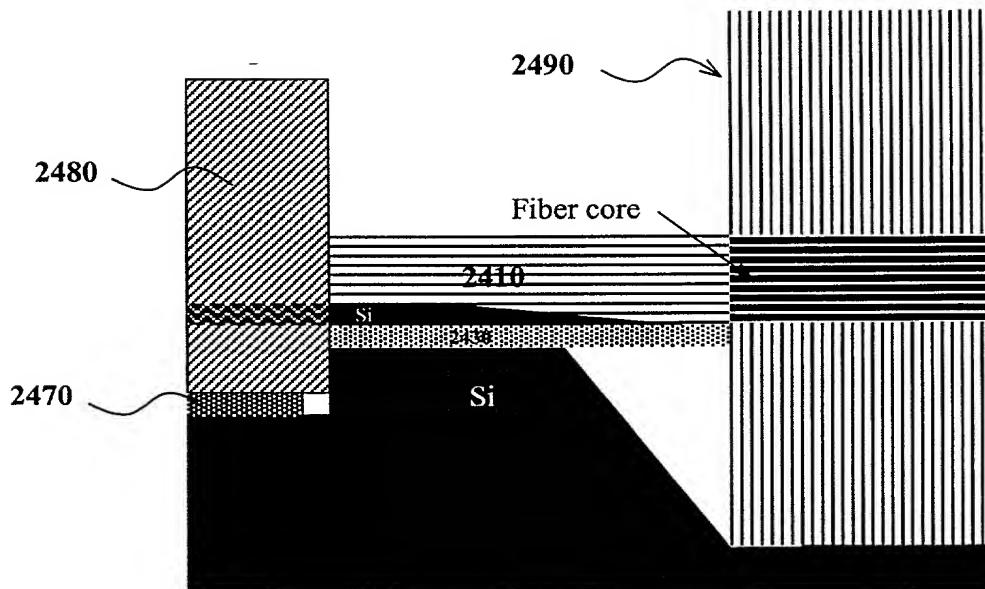
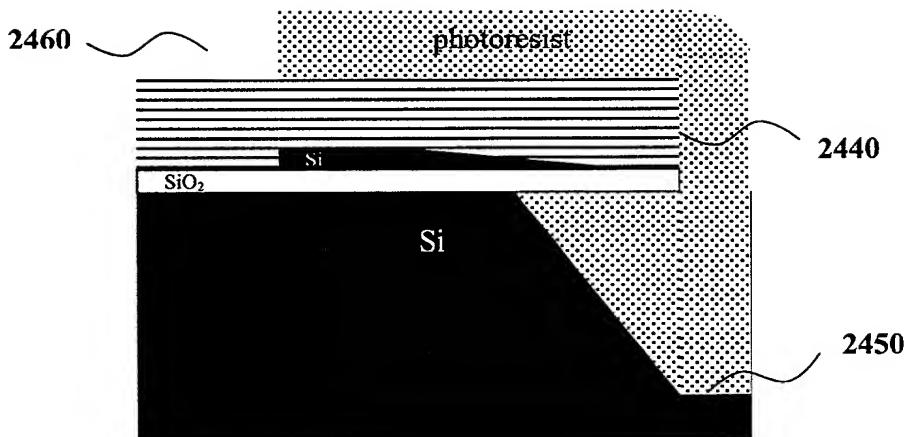
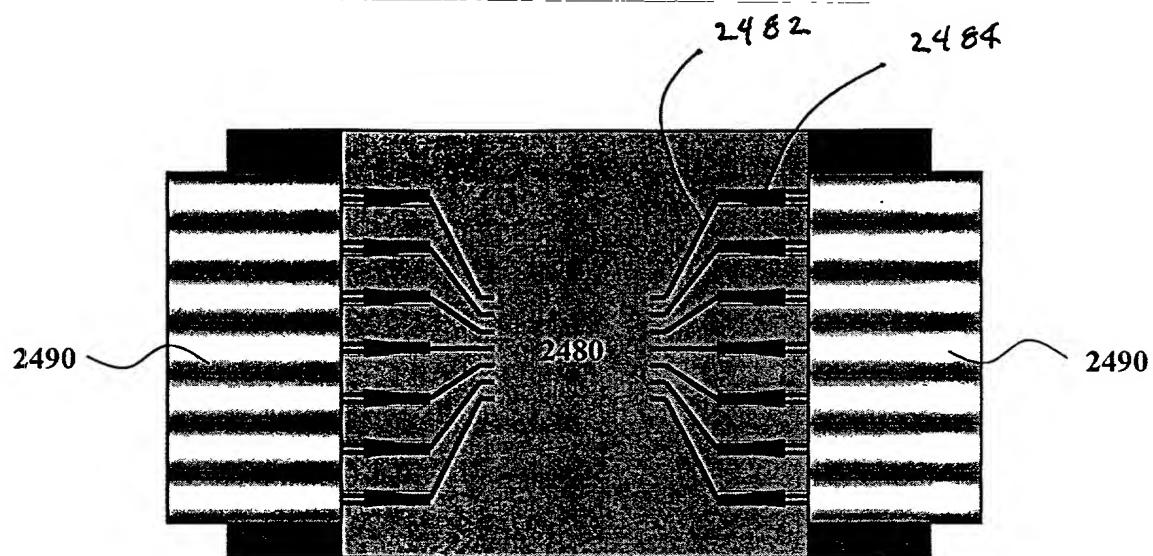


Fig 45C



**FIG 46**

10036347.1 C1.300

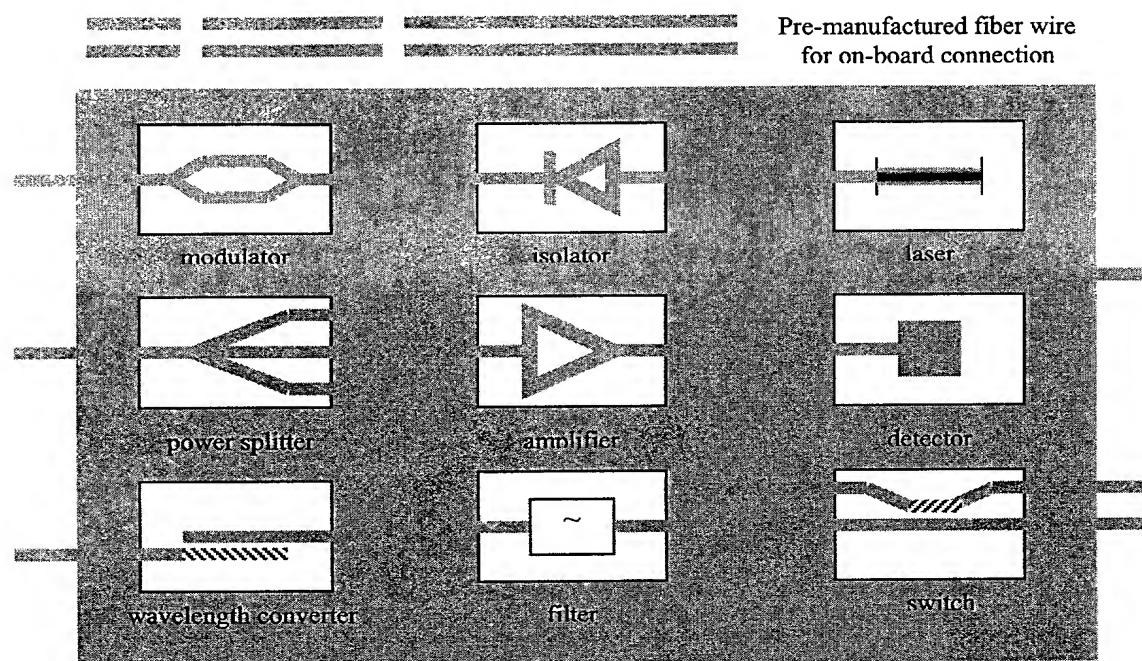


FIG 47